

UNCLASSIFIED

DEPARTMENT OF THE AIR FORCE

SUPPORTING DATA FOR FISCAL YEAR 1999 AMENDED BUDGET ESTIMATES

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

DESCRIPTIVE SUMMARIES



FEBRUARY 1998

VOLUME II

19980316 057

DISTRIBUTION STATEMENT A  
Approved for public release;  
Distribution Unlimited

UNCLASSIFIED

123

DTIC QUALITY INSPECTED 3

UNCLASSIFIED

**DESCRIPTIVE SUMMARIES FOR PROGRAM ELEMENTS OF  
THE DEPARTMENT OF THE AIR FORCE RESEARCH AND DEVELOPMENT PROGRAM  
FY1999 AMENDED BUDGET ESTIMATES  
FEBRUARY 1998**

**INTRODUCTION AND EXPLANATION OF CONTENTS**

1. (U) GENERAL. This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT&E) program elements and projects in the FY1999 President's Budget Submission (PB), except those listed in paragraph 2 - 4 below. All formats in this document are in accordance with the revised guidelines of the DoD Financial Management Regulation, Volume 2B, Chapter 5, insofar as possible.
  - a. Contents: Exhibits R-2 and R-3 provide narrative information for all RDT&E program elements and projects within the USAF FY1999 RDT&E program except the classified program elements. The formats and contents of this documents are in accordance with the guidelines and requirement of the Congressional committees insofar as possible.
  - b. The "Other Program Funding Summary" portion of the R-2 includes, in addition to RDT&E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.
  - c. Volume III contains the Facilities exhibit (DoD Form 1391) and Combating Terrorism exhibit.
2. (U) CLASSIFICATION.
  - a. All R-2 and R-3 exhibits contained in Volumes I and II are UNCLASSIFIED. Classified R-2 and R-3 exhibits are not included in the submission due to the level of security classification and necessity of special security clearances.
3. (U) COMPARISON OF FISCAL YEARS 1998 AND 1999 DATA. A direct comparison of Fiscal Years 1998 and 1999 data shown in this document with corresponding data in the descriptive summaries dated February 1997 will reveal differences. The table highlights the relationship of the FY 1999 budget structure to the FY 1998 budget approved by Congress.

UNCLASSIFIED



PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

Program Element	Remarks
BUDGET ACTIVITY 1: BASIC RESEARCH No changes	
BUDGET ACTIVITY 2: APPLIED RESEARCH DEVELOPMENT	
0602201F Phillips Laboratory Exploratory Dev	Project 4397 terminates in FY99
0602202F Armstrong Laboratory Exploratory Dev	Project 1900 terminates in FY99 Project 7755 terminates in FY99
0602203F Aerospace Propulsion	Project 3012 New Start in FY99
0602204F Aerospace Avionics	Project 2001 terminates in FY99
0602702F Command, Control & Communication	Project 2338 terminates in FY99
0602805F Dual Use Applications Program	Project 4770 New Start in FY99
0603852F CV-130J DEM/VAL	Project 4025 terminates in FY99
0603856F AF NRO Partnership	Project 4782 New Start in FY99
BUDGET ACTIVITY 3: ADVANCE TECHNOLOGY DEVELOPMENT	
0603106F Logistics Systems Technology	In FY99 and out, Projects 2745, 2940 and 2950 have been combined into Project 2745

## PROGRAM ELEMENT COMPARISON SUMMARY

### INTRODUCTION AND EXPLANATION OF CONTENTS

0603108F Integrated Data Systems	Transferred to PE 78611F, Project 4654
0603253F Advanced Avionics Integration	Software reuse efforts from Project 3833 transferred to Project 2735

### BUDGET ACTIVITY 4: DEMONSTRATION AND VALIDATION

0603441F Space Based IR Arch (Dem/Val) (Space)	Project 0008 completed in FY98
---------------------------------------------------	--------------------------------

0603852F C-130J Dem/Val	Project 4025 terminates in FY98
-------------------------	---------------------------------

0603853F EELV D/V (Space)	Completed in FY98
---------------------------	-------------------

0603860F Joint Precision & Landing Systems Dem/Val	New Start in FY99
-------------------------------------------------------	-------------------

0603876F Space Base Laser Systems Dem/Val	New Start in FY99
----------------------------------------------	-------------------

### BUDGET ACTIVITY 5: ENGINEERING AND MANUFACTURING DEVELOPMENT

0207414F Combat Intelligence System	PEs 0604321F, 0207431F and 0305158F have been consolidated into PE 0207414F, Project 2758
-------------------------------------	-------------------------------------------------------------------------------------------

0604201F Integrated Avionics Planning and	Project 2258 completes in FY99
-------------------------------------------	--------------------------------

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

0604218F Engine Model Derivation Program	Project 2634 terminates in FY99
0604227F Flight Simulator Dev	Project 4673 New Start in FY99 Projects 2325 and 2769 terminate in FY99
0604243F Manpower, Personnel and Training	Projects 3818 and 4369 terminate in FY99
0604441F Space Base IR Arch	Project 4598 transferred to PE 0604442F in FY99
0604442F Space Based Infrared Sys (SBIRS) Low	New Start in FY99, Funds transferred from PE 0604441F
0604602F Armament Ordnance Dev	MMHE moved from SEEK EAGLE (PE 0207590F/ Project 2784) to Armament Ordnance Development to align funding with ASC/CC decision to move MMHE out of the SEEK EAGLE program office.
0604611F Joint Standoff Land Attack Missile	Per Congressional direction funds are held for administrative reasons in PE 0207325F, Project 4515 pending completion of Alternative of Analysis
0604740F Computer Resource Technology	Project 2522 terminates in FY99
0604762F Common Low Observable Verification System	Project 4683 New Start in FY99
0604805F Duap Commercial Operations	New Start in FY99
0605011F RDT&E for Aging Aircraft	New Start in FY99

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

0605704F Theater Air Defense BMC41

Transfer to JTAMDO, PE 0605126J

**BUDGET ACTIVITY 6: RDT&E MANAGEMENT SUPPORT**

0603402F Space Test Program

Transferred to PE 0605864F beginning in FY99

0605853F Environmental Conservation

Transferred to O & M, PE 0702896F for non-test-specific base operations support

0605854F Pollution Prevention

All funds for Test Facility base operations support transferred to O&M, PE 0702896F

0605856F Environmental Compliance

Transferred to O&M, PE 0702896F for non-test-specific base operations support

0605876F Minor Construction

Transferred to O&M, PE 0702896F for non-test-specific base operations support

0605878F Maintenance and Repair

Transferred to O&M, PE 0702896F for non-test-specific base operations support

0605896F Real Property Services

Transferred to O&M, PE 0702896F for non-test-specific base operations support

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

BUDGET ACTIVITY 7: OPERATIONAL SYSTEM DEVELOPMENT

0102325F Joint Surveillance System	Projects 2976 and 4559 moved to PE 0102326F, Project 4592
0207131F A-10 Squadrons	Project 3861 New Start in FY99
0207217F Podded Reconnaissance System	Project 4611 completed in FY98
0207590F Seek Eagle	Project 2784 moved from Seek Eagle to Armament Ordnance Development (PE 0604602F/ Project 4696)
0207601F USAF Wargaming & Simulation	Project 1011 transferred to PE 0308610F Project 2888 transferred to PE 0207590F Project 4567 FY99 New Start
0207605F Wargaming & Simulation Center	New Program Element in FY99. FY98 funds in PE 27601F
0208030F WRM-Ammunition	Combined with 0207323F
0208019F Tactical Information Program	Project 4778 New Start in FY99
0208031F WRM-Equipment/Secondary Items	Project 4668 New Start in FY99
0302015F E-4B National Airborne Operations	Project 4777 New Start in FY99
0303131F Minimum Essential Emergency Communications Network	Project 4610 New Start in FY99

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

0303140F Information Systems Security Program	Project 4579 New Start in FY99
0303144F Electromagnetic Compatibility	Project 649E was transferred to DISA, PE 0303153K.
0303150F WWMCCS/Global Command	FY99 and out year funding transferred from 0303152F. PE title changed from Automated Data Processing Equipment
0303152F Automated Data Processing Equipment	Transferred to PE 0303150F
0305099F Global Air Traffic Management (GATM)	Projects 4689 and 4690 New Start in FY99
0305158F Tactical Terminals	Project 4394 moved to PE 0207414F, Project 2758
0305176F Combat Survivor Evader Locator	FY98 and prior years were funded in PE 0603853F and PE 0603854F
0305910F Spacetrack	Project 4241 completed in FY98
0305953F Evolved Expendable Launch Veh (Space)	New Start in FY99
0308601F Modeling & Simulation Support	New Start in FY99
0401119F C5 Airlift Squadrons	Project 4495 name change to Avionics Modernization Program
0401218F KC-135S	Project 4286 New Start in FY99

PROGRAM ELEMENT COMPARISON SUMMARY

INTRODUCTION AND EXPLANATION OF CONTENTS

0708071F Joint Log Program-Ammunition	New Start in FY99. FY97 and FY98 funds reclassified from O&M to RDT&E
0708611F Support Systems Development	Project 4654 New Start in FY99. Funds transferred from 0603018F
0803734F Crypto/Sigint Related Skill	Project 1005 completes in FY99
1001018F NATO JSTARS	Project 0002 terminates in FY99

## TABLE OF CONTENTS

### BUDGET ACTIVITY PROGRAM ELEMENT

PE	PROGRAM ELEMENT TITLE	PAGE
#1 - BASIC RESEARCH		
1	0601102F Defense Research Sciences	1
#2 - APPLIED RESEARCH		
2	0602102F Materials	43
3	0602201F Aerospace Flight Dynamics	61
4	0602202F Armstrong Lab Exploratory Development	85
5	0602203F Aerospace Propulsion	111
6	0602204F Aerospace Avionics	127
7	0602269F Hypersonic Technology Program	159
8	0602601F Phillips Laboratory Exploratory Development	163
9	0602602F Conventional Munitions	201
10	0602702F Command, Control, and Communication (C3)	215
11	0602805F Dual Use Applications Program (DUAP)	241
#3 - ADVANCED TECHNOLOGY DEVELOPMENT		
12	0603106F Logistics Systems Technology	243
13	0603108F Integrated Data Systems (IDS)	249
14	0603112F Advanced Materials for Weapon Systems	253
15	0603202F Aerospace Propulsion Subsystem Integration	265
16	0603203F Advanced Avionics for Aerospace Vehicles	269



## TABLE OF CONTENTS

### BUDGET ACTIVITY PROGRAM ELEMENT

PE	PROGRAM ELEMENT TITLE	PAGE
#3 - ADVANCED TECHNOLOGY DEVELOPMENT - Continued		
17	0603205F Flight Vehicle Technology	285
18	0603211F Aerospace Structures	295
19	0603216F Aerospace Propulsion and Power Technology	301
20	0603227F Personnel, Training, and Simulation Technology	315
21	0603231F Crew Systems & Personnel Protection Technology	321
22	0603245F Flight Vehicle Technology Integration	331
23	0603253F Advanced Avionics Integration	335
24	0603270F Electronic Combat (EC) Technology	347
25	0603302F Space and Missile Rocket Propulsion	359
26	0603311F Ballistic Missile Technology	371
27	0603401F Advanced Spacecraft Technology	375
28	0603410F Space Systems Environmental Interactions Technology	403
29	0603601F Conventional Weapons Technology	409
30	0603605F Advanced Weapons Technology	417
31	0603707F Weather Systems Technology	437
32	0603723F Environmental Engineering Technology	441
33	0603726F C3 Subsystem Integration	447
34	0603728F Advanced Computer Technology	459
35	0603789F C3 Advanced Development	473
#4 - DEMONSTRATION AND VALIDATION		
36	0208019F Tactical Information Program	487
37	0603260F Intelligence Advanced Development	491

# TABLE OF CONTENTS

## BUDGET ACTIVITY PROGRAM ELEMENT

PE	PROGRAM ELEMENT TITLE	PAGE
38	0603319F Airborne Laser Program	521
39	0603430F Advanced MILSATCOM (Space)	529
40	0603432F Polar Adjunct (Space)	535
41	0603434F National Polar-orbiting Operational Environmental Satellite System (NPOESS) (Space)	539
42	0603441F Space Based IR Arch (Dem/Val) (Space)	545
43	0603617F Command Control & Communications Applications	557
44	0603742F Combat Identification Technology	579
45	0603790F NATO Cooperative Research and Development	585
46	0603800F Joint Strike Fighter	629
47	0603851F ICBM Dem/Val	643
48	0603852F C-130J Dem/Val	671
49	0603853F Evolved Expendable Launch Veh (EELV) (Space)	677
50	0603854F Global Broadcast Service (GBS) (Space)	683
51	0603856F Air Force/NRO Partnership (AFNP)	689
52	0603860F Joint Precision Approach and Landing Systems - Dem/Val	693
53	0603876F Space Based Laser (SBL) (Space)	697
54	0604237F Variable Stability In-Flight Simulation Test Aircraft	703
55	0604327F Hardened Target Munitions	707
#5 - ENGINEERING AND MANUFACTURING DEVELOPMENT		
56	0305176F Combat Survivor Evader Locator (CSEL)	713
57	0604201F Integrated Avionics Planning and Development	717
58	0604218F Engine Model Derivative Program (EMDP)	737
59	0604222F Nuclear Weapons Support	745
60	0604226F B-1B	761

# TABLE OF CONTENTS

## BUDGET ACTIVITY PROGRAM ELEMENT

PE	PROGRAM ELEMENT TITLE	PAGE
61	0604227F Flight Simulator Development	779
62	0604233F Specialized Undergraduate Pilot Trng	797
63	0604239F F-22 EMD	811
64	0604240F B2 Advanced Technology Bomber	821
65	0604243F Mnpwr Pers & Trng Development	837
66	0604270F EW Development	849
67	0604441F Space Based IR Arch (EMD) (Space)	887
68	0604442F Space Based IR Arch (EMD) (Space)	899
69	0604479F Milstar LDR/MDR Sat Comm (Space)	903
70	0604480F Global Positioning System Block IIF (Space)	913
71	0604600F Munitions Dispenser Development	919
72	0604602F Arnament Ordnance Development	925
73	0604604F Submunitions	941
74	0604617F Air Base Operability	947
75	0604618F Joint Direct Attack Munitions	955
76	0604703F Aeromedical Systems Development	961
77	0604706F Life Support Systems	969
78	0604708F Civil, Fire, Environmental, Shelter	977
79	0604727F Joint Standoff Weapon Systems	999
80	0604735F Combat Training Ranges	1005
81	0604740F Computer Resources Management Technology	1013
82	0604750F Intelligence Equipment	1029
83	0604754F Joint Tactical Information Distribution System	1035
84	0604762F Common Low Observable Verification System (CLOVerS)	1053
85	0604779F Joint Interoperability Tactical Command/Control	1059

## TABLE OF CONTENTS

### BUDGET ACTIVITY PROGRAM ELEMENT

PE	PROGRAM ELEMENT TITLE	PAGE
86	0604805F Commercial Operations and Support Savings Initiative (COSSI)	1069
87	0604851F ICBM EMD	1073
88	0604853F Evolved Exp Launch Veh - EMD (Space)	1089
89	0605011F RDT&E FOR AGING AIRCRAFT	1095
#6 - MANAGEMENT AND SUPPORT		
90	0603402F Space Test Program (Space)	1101
91	0604256F Threat Simulator Development	1105
92	0604258F Target Systems Development	1121
93	0604759F Major Test And Evaluation Investment	1125
94	0605101F RAND Project Air Force	1139
95	0605306F Ranch Hand II Epidemiology Study	1143
96	0605712F Initial Operational Test & Eval	1147
97	0605807F Test And Evaluation Spt	1155
98	0605808F Development Planning	1175
99	0605854F Pollution Prevention	1179
100	0605860F Rocket System Launch Program (Space)	1183
101	0605864F Space Test Program (Space)	1187
102	1001004F International Activities	1191
#7 - OPERATIONAL SYSTEM DEVELOPMENT		
103	0101113F B-52 Squadrons	1205
104	0101120F Advanced Cruise Missile	1227
105	0102325F Joint Surveillance System	1233

# TABLE OF CONTENTS

## BUDGET ACTIVITY PROGRAM ELEMENT

PE	PROGRAM ELEMENT TITLE	PAGE
106	0102326F	1239
107	0102411F	1245
108	0207131F	1249
109	0207133F	1253
110	0207134F	1261
111	0207136F	1269
112	0207141F	1275
113	0207161F	1281
114	0207163F	1289
115	0207217F	1297
116	0207247F	1303
117	0207268F	1307
118	0207320F	1313
119	0207325F	1319
120	0207412F	1327
121	0207414F	1335
122	0207417F	1341
123	0207423F	1349
124	0207438F	1363
125	0207581F	1381
126	0207590F	1387
127	0207601F	1401
128	0207605F	1419
129	0208006F	1425
130	0208021F	1433
	Region/Sector Operations Control Center Modernization Program	
	North Atlantic Defense System (NADS)	
	A-10 Squadrons	
	F-16 Squadrons	
	F-15E Squadrons	
	Manned Destructive Suppression	
	F-117A Squadrons	
	Tactical AIM Missile	
	Adv Med Range A/A Msl	
	Podded Reconnaissance System (PRS)	
	Air Force TENCAP	
	Aircraft Engine Component Improvement Program (CIP)	
	Sensor Fuzed Weapons	
	Joint Air-to-Surface Standoff Missile	
	Theater Air Control System	
	Combat Intelligence System	
	Airborne Warning & Control System (AWACS)	
	Advanced Communications Systems	
	Theater Battle Management (TBM) C4I	
	Joint STARS	
	Seek Eagle	
	USAF Modeling and Simulation	
	Wargaming and Simulation Centers	
	Mission Planning Systems	
	Information Warfare Support	

# TABLE OF CONTENTS

## BUDGET ACTIVITY PROGRAM ELEMENT

	PE	PROGRAM ELEMENT TITLE	PAGE
131	0208031F	WRM-Equipment/Secondary Items	1437
132	0208060F	Theater Missile Defense	1445
133	0302015F	E-4B National Airborne Operations Center (NAOC)	1461
134	0303110F	Def Satellite Comm Sys (Space)	1467
135	0303131F	Minimum Essential Emergency Communications Network (MEECN)	1473
136	0303140F	Information Systems Security Program	1489
137	0303141F	Global Combat Support System (GCSS)	1509
138	0303144F	Electromag Compatibility Analysis Ctr	1517
139	0303150F	WWMCCS/Global Command and Control System	1525
140	0303152F	Automated Data Processing Equipment	1531
141	0303601F	MILSTAR Satellite Comm Sys (Space)	1537
142	0305099F	Global Air Traffic Management (GATM)	1543
143	0305110F	Satellite Control Network (Space)	1559
144	0305111F	Weather Service	1567
145	0305114F	Air Traffic Cntrl/Approach/Landing Sys (ATCALS)	1573
146	0305119F	Medium Launch Vehicles (Space)	1587
147	0305128F	Security and Investigative Activities (S&IA)	1593
148	0305137F	National Airspace System	1599
149	0305138F	Upper Stage Space Vehicles (Space)	1605
150	0305144F	Titan Space Launch Vehicles (Space)	1611
151	0305158F	Tactical Terminals	1617
152	0305160F	Def Meteorological Satellite Prog (Space)	1629
153	0305164F	Navstar Global Pos Sys (User Eq) (Space)	1635
154	0305165F	NAVSTAR GPS (Space)	1643
155	0305182F	Eastern Space Launch Facility (Space)	1649

# TABLE OF CONTENTS

## BUDGET ACTIVITY PROGRAM ELEMENT

	PE	PROGRAM ELEMENT TITLE	PAGE
156	0305205F	Endurance UAVs	1655
157	0305207F	Manned Reconnaissance	1661
158	0305906F	NCMC-TW/AA Systems	1667
159	0305910F	Spacetrack (Space)	1683
160	0305911F	Defense Support Program (Space)	1699
161	0305913F	Nudet Detection System	1713
162	0305917F	DoD Space Architect (Space)	1719
163	0305953F	Evolved Expendable Launch Veh (Space)	1725
164	0308601F	Modeling and Simulation Support	1729
165	0401119F	C-5 Airlift Squadrons	1739
166	0401130F	C-17 Aircraft	1753
167	0401214F	Air Cargo Materiel Handling (463-L)	1759
168	0401218F	KC-135 Squadrons	1771
169	0702207F	Depot Maintenance (Non-If)	1789
170	0708011F	Industrial Preparedness	1795
171	0708026F	Product/Reliable/Avail/Maintain Prog	1805
172	0708071F	Joint Logistics Program - Ammunition System	1817
173	0708611F	Support Systems Development (SSD)	1823
174	0804734F	Cryptologic/SIGINT Related Skill Training	1847
175	0901218F	Civilian Compensation Program	1853
176	1001018F	NATO JSTARS	1857

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Joint Precision Approach and Landing Systems - Dem/Val		
A-10 Squadrons	0603860F	693
Adv Med Range A/A Msl	0207131F	1249
Advanced Avionics for Aerospace Vehicles	0207163F	1289
Advanced Avionics Integration	0603203F	269
Advanced Communications Systems	0603253F	335
Advanced Computer Technology	0207423F	1349
Advanced Cruise Missile	0603728F	459
Advanced Materials for Weapon Systems	0101120F	1227
Advanced MILSATCOM (Space)	0603112F	253
Advanced Spacecraft Technology	0603430F	529
Advanced Weapons Technology	0603401F	375
Aeromedical Systems Development	0603605F	417
Aerospace Avionics	0604703F	961
Aerospace Flight Dynamics	0602204F	127
Aerospace Propulsion	0602201F	61
Aerospace Propulsion and Power Technology	0602203F	111
Aerospace Propulsion Subsystem Integration	0603216F	301
Aerospace Structures	0603202F	265
Air Base Operability	0603211F	295
Air Cargo Materiel Handling (463-L)	0604617F	947
Air Force TENCAP	0401214F	1759
Air Force/NRO Partnership (AFNP)	0207247F	1303
Air Traffic Cntrl/Approach/Landing Sys (ATCALS)	0603856F	689
Airborne Laser Program	0305114F	1573
	0603319F	521



# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Airborne Warning & Control System (AWACS)	0207417F	1341
Aircraft Engine Component Improvement Program (CIP)	0207268F	1307
Armament Ordnance Development	0604602F	925
Armstrong Lab Exploratory Development	0602202F	85
Automated Data Processing Equipment	0303152F	1531
B-1B	0604226F	761
B-52 Squadrons	0101113F	1205
B2 Advanced Technology Bomber	0604240F	821
Ballistic Missile Technology	0603311F	371
C-130J Dem/Val	0603852F	671
C-17 Aircraft	0401130F	1753
C-5 Airlift Squadrons	0401119F	1739
C3 Advanced Development	0603789F	473
C3 Subsystem Integration	0603726F	447
Civil, Fire, Environmental, Shelter	0604708F	977
Civilian Compensation Program	0901218F	1853
Combat Identification Technology	0603742F	579
Combat Intelligence System	0207414F	1335
Combat Survivor Evader Locator (CSEL)	0305176F	713
Combat Training Ranges	0604735F	1005
Command Control & Communications Applications	0603617F	557
Command, Control, and Communication (C3)	0602702F	215
Commercial Operations and Support Savings Initiative (COSSI)	0604805F	1069
Common Low Observable Verification System (CLOVerS)	0604762F	1053
Computer Resources Management Technology	0604740F	1013

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Conventional Munitions	0602602F	201
Conventional Weapons Technology	0603601F	409
Crew Systems & Personnel Protection Technology	0603231F	321
Cryptologic/SIGINT Related Skill Training	0804734F	1847
Def Meteorological Satellite Prog (Space)	0305160F	1629
Def Satellite Comm Sys (Space)	0303110F	1467
Defense Research Sciences	0601102F	1
Defense Support Program (Space)	0305911F	1699
Depot Maintenance (Non-If)	0702207F	1789
Development Planning	0605808F	1175
DoD Space Architect (Space)	0305917F	1719
Dual Use Applications Program (DUAP)	0602805F	241
E-4B National Airborne Operations Center (NAOC)	0302015F	1461
Eastern Space Launch Facility (Space)	0305182F	1649
Electromag Compatibility Analysis Ctr	0303144F	1517
Electronic Combat (EC) Technology	0603270F	347
Endurance UAVs	0305205F	1655
Engine Model Derivative Program (EMDP)	0604218F	737
Environmental Engineering Technology	0603723F	441
Evolved Exp Launch Veh - EMD (Space)	0604853F	1089
Evolved Expendable Launch Veh (EELV) (Space)	0603853F	677
Evolved Expendable Launch Veh (Space)	0305953F	1725
EW Development	0604270F	849
F-117A Squadrons	0207141F	1275
F-15E Squadrons	0207134F	1261

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
F-16 Squadrons	0207133F	1253
F-22 EMD	0604239F	811
Flight Simulator Development	0604227F	779
Flight Vehicle Technology	0603205F	285
Flight Vehicle Technology Integration	0603245F	331
Global Air Traffic Management (GATM)	0305099F	1543
Global Broadcast Service (GBS) (Space)	0603854F	683
Global Combat Support System (GCSS)	0303141F	1509
Global Positioning System Block IIF (Space)	0604480F	913
Hardened Target Munitions	0604327F	707
Hypersonic Technology Program	0602269F	159
ICBM Dem/Val	0603851F	643
ICBM EMD	0604851F	1073
Industrial Preparedness	0708011F	1795
Information Systems Security Program	0303140F	1489
Information Warfare Support	0208021F	1433
Initial Operational Test & Eval	0605712F	1147
Integrated Avionics Planning and Development	0604201F	717
Integrated Data Systems (IDS)	0603108F	249
Intelligence Advanced Development	0603260F	491
Intelligence Equipment	0604750F	1029
International Activities	1001004F	1191
Joint Air-to-Surface Standoff Missile	0207325F	1319
Joint Direct Attack Munitions	0604618F	955
Joint Interoperability Tactical Command/Control	0604779F	1059

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Joint Logistics Program - Ammunition System	0708071F	1817
Joint Standoff Weapon Systems	0604727F	999
Joint Strike Fighter	0603800F	629
Joint STARS	0207581F	1381
Joint Surveillance System	0102325F	1233
Joint Tactical Information Distribution System	0604754F	1035
KC-135 Squadrons	0401218F	1771
Life Support Systems	0604706F	969
Logistics Systems Technology	0603106F	243
Major Test And Evaluation Investment	0604759F	1125
Manned Destructive Suppression	0207136F	1269
Manned Reconnaissance	0305207F	1661
Materials	0602102F	43
Medium Launch Vehicles (Space)	0305119F	1587
Milstar LDR/MDR Sat Comm (Space)	0604479F	903
Minimum Essential Emergency Communications Network (MEECN)	0303131F	1473
Mission Planning Systems	0208006F	1425
MILSTAR Satellite Comm Sys (Space)	0303601F	1537
Mnpwr Pers & Trng Development	0604243F	837
Modeling and Simulation Support	0308601F	1729
Munitions Dispenser Development	0604600F	919
National Aerospace System	0305137F	1599
National Polar-orbiting Operational Environmental Satellite System (NPOESS) (Space)	0603434F	539
Navstar Global Pos Sys (User Eq) (Space)	0305164F	1635
NATO Cooperative Research and Development	0603790F	585

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
NATO JSTARS	1001018F	1857
NAVSTAR GPS (Space)	0305165F	1643
NCMC-TW/AA Systems	0305906F	1667
North Atlantic Defense System (NADS)	0102411F	1245
Nuclear Weapons Support	0604222F	745
Nudet Detection System	0305913F	1713
Personnel, Training, and Simulation Technology	0603227F	315
Phillips Laboratory Exploratory Development	0602601F	163
Podded Reconnaissance System (PRS)	0207217F	1297
Polar Adjunct (Space)	0603432F	535
Pollution Prevention	0605854F	1179
Product/Reliable/Avail/Maintain Prog	0708026F	1805
Ranch Hand II Epidemiology Study	0605306F	1143
RAND Project Air Force	0605101F	1139
RDT&E FOR AGING AIRCRAFT	0605011F	1095
Region/Sector Operations Control Center Modernization Program	0102326F	1239
Rocket System Launch Program (Space)	0605860F	1183
Satellite Control Network (Space)	0305110F	1559
Security and Investigative Activities (S&IA)	0305128F	1593
Seek Eagle	0207590F	1387
Sensor Fuzed Weapons	0207320F	1313
Space and Missile Rocket Propulsion	0603302F	359
Space Based IR Arch (Dem/Val) (Space)	0603441F	545
Space Based IR Arch (EMD) (Space)	0604442F	899
Space Based IR Arch (EMD) (Space)	0604441F	887

# ALPHABETICAL LISTING

Program Element Title	PE	PAGE
Space Based Laser (SBL) (Space)	0603876F	697
Space Systems Environmental Interactions Technology	0603410F	403
Space Test Program (Space)	0603402F	1101
Space Test Program (Space)	0605864F	1187
Spacetrack (Space)	0305910F	1683
Specialized Undergraduate Pilot Trng	0604233F	797
Submunitions	0604604F	941
Support Systems Development (SSD)	0708611F	1823
Tactical AIM Missile	0207161F	1281
Tactical Information Program	0208019F	487
Tactical Terminals	0305158F	1617
Target Systems Development	0604258F	1121
Test And Evaluation Spt	0605807F	1155
Theater Air Control System	0207412F	1327
Theater Battle Management (TBM) C4I	0207438F	1363
Theater Missile Defense	0208060F	1445
Threat Simulator Development	0604256F	1105
Titan Space Launch Vehicles (Space)	0305144F	1611
Upper Stage Space Vehicles (Space)	0305138F	1605
USAF Modeling and Simulation	0207601F	1401
Variable Stability In-Flight Simulation Test Aircraft	0604237F	703
Wargaming and Simulation Centers	0207605F	1419
Weather Service	0305111F	1567
Weather Systems Technology	0603707F	437
WRM-Equipment/Secondary Items	0208031F	1437

ALPHABETICAL LISTING

Program Element Title

PE PAGE

WWMCCS/Global Command and Control System

0303150F

1525

PE NUMBER: 0604602F

UNCLASSIFIED

PE TITLE: Armament Ordnance Development

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604602F Armament Ordnance Development									
	COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		3,477	1,511	12,037	1,342	1,363	1,395	1,431	Continuing	Continuing	
4696 Armament Standardization/Control/Munitions Material Handling Equipment (MMHE)*		0	0	1,178	1,205	1,229	1,259	1,292	Continuing	Continuing	
3133 Bombs & Fuzes		3,348	1,383	10,727	0	0	0	0	Continuing	Continuing	
5613 Containers		129	128	132	137	134	136	139	Continuing	Continuing	
Quantity of RDT&E Articles		609/\$2852	0	0	0	0	0	0	0	747/\$3658**	

\* MMHE is funded in Seek Eagle, PE 27590F, for FY97 and FY98

\*\* Joint Programmable Fuze (JPF) RDT&amp;E Articles only

**(U) A. Mission Description and Budget Item Justification**

The Armament Ordnance Development program provides for initial and continuing development of munition equipment for support and operational use.

Armament Standardization/Control/Munitions Material Handling Equipment (MMHE): This continuing project develops and improves the standardization and commonality of munitions handling and armament equipment to preclude duplication. This project's efforts are limited to the study, design, and development, of MMHE and armament control systems. Procurement will be performed and funded by the applicable weapons system project. (Funding for Project 4696 in FY97 and FY98 is through PE 27590F, Seek Eagle.)

Bombs and Fuzes: This project develops and improves conventional bombs and fuzes. It currently includes the development of the Joint Programmable Fuze (JPF) and the Hard Target Smart Fuze (HTSF). Small Bomb System (SBS) begins the Concept Exploration phase in this project. The initial Small Bomb System program funding will be used to explore concepts to meet CAF MNS 304-97 for the Miniaturized Munitions Capability.

Containers: This project funds the operation of the tri-service Container Design Retrieval System (CDRS). This maintains a container database to preclude proliferation and duplication of munitions containers. It also supports organic container design, prototyping, and testing capabilities.

This Armament Ordnance Development program is funded in budget activity 5 - Engineering and Manufacturing Development because the projects support the EMD phase of several munitions related items and functions.

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## February 1998

## PE NUMBER AND TITLE

**0604602F Armament Ordnance Development**

**Total**  
**Cost**  
**Continuing**

FY 1997

3,483

3,642

06-

69-

3

9-

3,477

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total Cost Compl
--	---------	---------	---------	---------	---------	---------	---------	------------------------------

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604602F Armament Ordnance Development

PROJECT

4696

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4696 Armament Standardization/Control/ Munitions Material Handling Equipment (MMHE)*	0	0	1,178	1,205	1,229	1,259	1,292	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification

Armament Standardization/Control/Munitions Material Handling Equipment (MMHE): This continuing project develops and improves the standardization and commonality of improved munitions handling and armament equipment to preclude duplication and proliferation. This project's efforts are limited to the study, design, and development, of MMHE and armament control systems. Procurement will be performed and funded by the applicable weapons system project. (Funding for Project 4696 in FY97 and FY98 is through PE 27590F, Seek Eagle.)

(U) FY 1997 (\$ in Thousands):

– (U) \$ 0 Project funded in PE 27590F, Seek Eagle.

(U) FY 1998 (\$ in Thousands):

– (U) \$ 0 Project funded in PE 27590F, Seek Eagle.

(U) FY 1999 (\$ in Thousands):

– (U) \$ 498 Design, prototype and test various MMHE projects, i.e. complete testing of GBU Wing Container, International Storage Organization (ISO) Container Handling Device, T-2 Pallet Lock Device, and Flare Assembly Fixture. Complete prototype/testing of Alternate Mission Equipment (AME) Maintenance Stand.

– (U) \$ 480 Initiate EMD for Next Generation Munitions Handler, complete evaluation/testing and MHU-110 Trailer Upgrade and Aluminum Rail Set

– (U) \$ 100 Complete preliminary design of Next Generation Munitions Trailer and B-52 ALCM Pylon Loading Adapter

– (U) \$ 100 Continue ISO Container Munitions Packaging and Bottom Lift Forklift Projects

– (U) \$1,178 Total

Project 4696

Page 3 of 15 Pages

Exhibit R-2 (PE 0604602F)

927

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4696

## 5 - Engineering and Manufacturing Development

0604602F Armament Ordnance Development

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost

(U) Previous President's Budget

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/ FY 1999 President's Budget

FY 1997

0

0

FY 1998

0

0

FY 1999

0

1,178

1,178

Continuing

(U) Change Summary Explanation:

Funding: Project funding for FY97 and FY98 is in PE 27590, Seek Eagle. FY99 funding transferred from Seek Eagle.

Schedule: None.

Technical: None.

(U) C. Other Program Funding Summary (\$ in Thousands): Not Applicable.(U) D. Schedule Profile: Not Applicable

Project 4696

Page 4 of 15 Pages

Exhibit R-2 (PE 0604602F)

928

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604602F Armament Ordnance Development	February 1998	4696

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997*</u>	<u>FY 1998*</u>	<u>FY 1999</u>
(U) Various MMHE Projects	0	0	498
(U) Next Generation Munitions Handler	0	0	400
(U) MHU-110 Trailer Upgrade	0	0	50
(U) Aluminum Rail Set	0	0	30
(U) Next Generation Munitions Trailer	0	0	75
(U) ISO Container Handling	0	0	100
(U) ALCM Pylon Adapter	0	0	25
(U) Total	0	0	1,178

\* Funded in Seek Eagle, PE 27590F

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
5 - Engineering and Manufacturing Development		0604602F Armament Ordnance Development				February 1998		PROJECT 4696	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)									
Performing Organizations:									
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete Total Program
<u>Product Development Organizations</u>									
Dept. of Energy/ NASA	MIPR	Oct 98	N/A	N/A	0	0	0	400	Continuing
<u>Support and Management Organizations</u>									
TEAS/TAMS	MIPR	Oct 98	N/A	N/A	0	0	0	426	Continuing
AFDTC/FM	MIPR	Oct 98	N/A	N/A	0	0	0	160	Continuing
64SSUPS/LGS	MIPR	Cont.	N/A	N/A	0	0	0	30	Continuing
WL/MN	MIPR	Cont.	N/A	N/A	0	0	0	50	Continuing
<u>Test and Evaluation Organizations</u>									
46 <sup>th</sup> Test Wing	MIPR	Cont.	N/A	N/A	0	0	0	112	Continuing
Government Furnished Property: Not Applicable.									
<u>Subtotal Product Development</u>									
<u>Subtotal Support and Management</u>									
<u>Subtotal Test and Evaluation</u>									
<u>Total Project</u>									
					0	0	0	1178	Continuing
					0	0	0	400	Continuing
					0	0	0	666	Continuing
					0	0	0	112	Continuing
					0	0	0	1178	Continuing

Project 4696

Page 6 of 15 Pages

Exhibit R-3 (PE 0604602F)

Project 4696

Page 6 of 15 Pages

Exhibit R-3 (PE 0604602F)

930

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604602F Armament Ordnance Development								3133	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
3133 Bombs & Fuzes		3,348	1,383	10,727	0	0	0	0	Continuing	Continuing	
Quantity of RDT&E Articles		609(\$2852)*	0	0	0	0	0	0	0	747(\$3658)*	
* JPF RDT&E Articles only											
<p>(U) A. <u>Mission Description and Budget Item Justification</u>  <u>Bombs and Fuzes</u>: This project develops and improves conventional bombs and fuzes including the development of the Joint Programmable Fuze (JPF) and the Hard Target Smart Fuze (HTSF). Small Bomb System (SBS) begins the Concept Exploration phase in this project.</p>											
(U) FY 1997 (\$ in Thousands):											
-	(U) \$ 1,667	Started JPF IOT&E									
-	(U) \$ 158	Started JPF/JDAM Integration Flight Test									
-	(U) \$ 1,523	Started Hard Target Smart Fuze (HTSF) EMD									
-	(U) \$ 3,348	Total									
(U) FY 1998 (\$ in Thousands):											
-	(U) \$ 201	Complete JPF IOT&E Test									
-	(U) \$ 922	Complete JPF/JDAM Integration Flight Test									
-	(U) \$ 260	Complete JPF Functional Configuration Audit, Production Readiness Review, and Physical Configuration Audit									
-	(U) \$ 1,383	Total									
(U) FY 1999 (\$ in Thousands):											
-	(U) \$ 1,050	HTSF System Requirements Review (SRR)									
-	(U) \$ 2,534	HTSF Preliminary Design Review (PDR)									
-	(U) \$ 2,243	Start Detailed Design									
-	(U) \$ 1,000	Small Bomb System Concept Exploration Contracts									
-	(U) \$ 250	Small Bomb System Program Office Support									
-	(U) \$ 3,650	Small Bomb System Analysis of Alternatives (AoA)									
-	(U) \$10,727	Total									

Project 3133

Page 7 of 15 Pages

Exhibit R-2 (PE 0604602F)

931

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604602F Armament Ordnance Development

3133

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget	3,354	1,461	0	Continuing
(U) Appropriated Value	3,509	1,461		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-86	-51		
b. SBIR	-69	-27		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-6			
(U) Adjustments to Budget Years Since FY 1998 PB			10,727	
(U) Current Budget Submit/FY 1999 President's Budget	3,348	1,383	10,727	Continuing
(U) Change Summary Explanation:				

Funding: FY97 reductions were for SBIR, General Congressional Reductions, and support for Bosnia operations. FY98 reductions were for SBIR, and General Congressional Reductions. FY 1999 changes were due to funding Hard Target Smart Fuze and funding Small Bomb System pre-Milestone I risk reduction and Analysis of Alternatives.

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Appropriation: Ammunition Procurement, Air Force, PE: 0208030F, Program Title:									
(U) Joint Programmable Fuze	4,125	5,739	15,326	9,864	11,330	13,552	42,911	116,546	219,393
(U) Hard Target Smart Fuze	0	0	0	7,706	7,763	0	0	0	15,469
(U) Appropriation: RDT&E, Air Force, PE: 0208030F War Readiness Materials (HTSF)	670	0	0	0	0	0	0	0	670

(U) D. Schedule Profile

FY 1997

FY 1998

FY 1999

Project 3133

Page 8 of 15 Pages

Exhibit R-2 (PE 0604602F)

932

UNCLASSIFIED

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998					
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT					
5 - Engineering and Manufacturing Development	0604602F Armament Ordnance Development		3133					
	1	2	3	4	1	2	3	4
(U) Joint Programmable Fuze (JPF)								
(U) Complete DT&E		X						
(U) Start IOT&E								
(U) Complete IOT&E				X				
(U) Hard Target Smart Fuze (HTSF)								
(U) EMD Start				X				
(U) System Requirement Review (SRR)					X			
(U) Preliminary Design Review (PDR)							X	
(U) Start Detailed Design							X	
(U) Small Bomb System (SBS)								
(U) Start Concept Exploration/AoA					X			

Project 3133

Page 9 of 15 Pages

Exhibit R-2 (PE 0604602F)

933

**UNCLASSIFIED**



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 5 - Engineering and Manufacturing Development

0604602F Armament Ordnance Development

3133

(U) A. Project Cost Breakdown (\$ in Thousands)

(U) a. Contractor	FY 1997	FY 1998	FY 1999
	2,893	1019	5,805
(U) b. Government			
Testing	18	97	2,993
Contractor support	174	112	595
Management support	263	128	684
ECO	0	27	650
Government Total	455	364	4,922
(U) Total	3,348	1,383	10,727

Project 3133

Page 10 of 15 Pages

Exhibit R-3 (PE 0604602F)

934

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
5 - Engineering and Manufacturing Development										0604602F Armament Ordnance Development	3133
PE NUMBER AND TITLE											
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
Performing Organizations:											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
<u>Product Development Organizations</u>											
Motorola (JPF)	CPAF	Jul 93	21,357	21,357	18,819	1,519	1019	0	0	21,357	
Only)											
Unknown (HTSF and SBS)	TBD	Jan 98	TBD	7,179	0	1,374	0	5,805	Continuing	Continuing	
<u>Support and Management Organizations</u>											
TEAS/TEAMS	Various	Various	N/A	N/A	959	174	112	595	Continuing	Continuing	
ASC/WMG	Various	Various	N/A	N/A	597	263	128	684	Continuing	Continuing	
Other	Various	Various	N/A	N/A	250	0	27	650	Continuing	Continuing	
<u>Test and Evaluation Organizations</u>											
46th Test Wing	Various	Mar 94	N/A	N/A	3,212	18	97	2,993	Continuing	Continuing	
<b>Government Furnished Property: Not Applicable</b>											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
					18,819	2,893	1019	5,805	Continuing	Continuing	
					1,806	437	267	1,929	Continuing	Continuing	
					3,212	18	97	2,993	Continuing	Continuing	
					23,837	3,348	1,383	10,727	Continuing	Continuing	

Project 3133

Page 11 of 15 Pages

Exhibit R-3 (PE 0604602F)

935

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604602F Armament Ordnance Development								5613	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
5613 Containers		129	128	132	137	134	136	139	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
(U) A. <u>Mission Description and Budget Item Justification</u>											
Containers: This project funds the operation of the tri-service Container Design Retrieval System (CDRS). This system includes the maintenance of a container database to preclude proliferation and duplication of munitions containers. It also supports organic container design, prototyping, and testing capabilities. This project's efforts are limited to the study, design, and development of container systems. Any procurement will be performed and funded by the applicable weapons system project.											
(U) FY 1997 (\$ in Thousands):											
-	(U) \$5	Initiated/continued/completed design/development of various CDRS projects, including a modular mobility container system, and special projects.									
-	(U) \$5	Provided container design expertise, management, and technical support to programs such as AIM-9X, JASSM, AMRAAM, AGM-142, JDAM, AGM-130, and WCMD.									
-	(U) \$119	Managed and operated the CDRS data base and support service.									
-	(U) \$129	Total									
(U) FY 1998 (\$ in Thousands):											
-	(U) \$5	Initiate/continue/complete design/development of various CDRS projects, including a modular mobility container system, and special projects.									
-	(U) \$5	Provide container design expertise, management, and technical support to programs such as AIM-9X, JASSM, AMRAAM, AGM-142, JDAM, AGM-130, and WCMD.									
-	(U) \$118	Manage and operate the CDRS data base and support service.									
-	(U) \$128	Total									

Project 5613

Page 12 of 15 Pages

Exhibit R-2 (PE 0604602F)

936

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604602F Armament Ordnance Development

PROJECT

5613

(U) FY 1999 (\$ in Thousands):

- (U) \$5 Initiate/continue/complete design/development of various CDRS projects, including a modular mobility container system, and special projects.  
 - (U) \$5 Provide container design expertise, management, and technical support to programs such as AIM-9X, JASSM, AMRAAM, AGM-142, JDAM, AGM-130, and WCMD.  
 - (U) \$122 Manage and operate the CDRS data base and support service.  
 - (U) \$132 Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget	129	136	135	Continuing
(U) Appropriated Value	133	136		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-4	-5		
b. SBIR		-3		
c. Omnibus or Other Above Threshold Reprogram			-3	
d. Below Threshold Reprogramming			132	Continuing
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY99 President's Budget	129	128		

## (U) Change Summary Explanation:

Funding: FY98 change due to Congressional General Reductions and SBIR. FY99 change due to inflation.

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands): Not Applicable(U) D. Schedule Profile: Not Applicable

Project 5613

Page 13 of 15 Pages

Exhibit R-2 (PE 0604602F)

937

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development		0604602F Armament Ordnance Development		February 1998	5613
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U)	Travel/Transportation	70	70	72	
(U)	Supplies/Equipment	49	48	50	
(U)	Contractor Support	0	0	0	
(U)	Mission Support	10	10	10	
(U)	Test Support	0	0	0	
(U)	Total	129	128	132	
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
<u>Performing Organizations:</u>					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Program
				<u>FY 1997</u>	<u>Budget FY 1997</u>
				<u>FY 1998</u>	<u>FY 1999</u>
				<u>Budget Complete</u>	<u>Program</u>
<u>Product Development Organizations</u>					
N/A					
<u>Support and Management Organizations</u>					
Sverdrup (TEAS)	Various	Oct 93	N/A	N/A	0
ASC/YHS	Various	Various	N/A	N/A	10
Other	Various	Various	N/A	N/A	118
					119
					0
					10
					122
					Continuing
					Continuing
					Continuing
<u>Test and Evaluation Organizations</u>					
46th Test Wing	Various	Various	N/A	N/A	0
					0
					Continuing
					Continuing

Project 5613

Page 14 of 15 Pages

Exhibit R-3 (PE 0604602F)

Project 5613

Page 14 of 15 Pages

Exhibit R-3 (PE 0604602F)

938

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development	0604602F Armament Ordnance Development			5613
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands) (Continued)				
Government Furnished Property: Not Applicable				
Subtotal Product Development	N/A	N/A	N/A	N/A
Subtotal Support and Management	2,474	128	Continuing	Continuing
Subtotal Test and Evaluation	190	0	Continuing	Continuing
Total Project	2,664	128	Continuing	Continuing

Project 5613

Page 15 of 15 Pages

Exhibit R-3 (PE 0604602F)

Exhibit R-3 (PE 0604602F)

Page 15 of 15 Pages

Project 5613

939

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604604F  
PE TITLE: Submunitions

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604604F Submunitions								3166	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
3166 Joint Smart Munition Test and Evaluation Program		4,761	4,748	4,805	4,886	4,909	4,921	4,867	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**

This PE provides support for smart munitions test and evaluation (T&E) activities, including T&E support for programs in engineering and manufacturing development. Project 3166 is a joint US Air Force/US Army project office which provides RDT&E support for developmental smart munitions acquisition programs. Project 3166 evaluates developmental smart munitions and related emerging technology with applications against vehicle targets and Theater Air Defense units by determining performance against actual foreign targets in realistic environments and in the presence of countermeasures. Data gathered is used to meet developmental decision points requiring highly reliable, realistic performance data. The project is a major focal point for joint Air Force and Army target signature collection and dissemination for development and exploitation purposes. Phase IV (FY96-98) emphasized providing best value test and evaluation support for submunition development and weaponization studies, and Phase V (FY99-01) will provide modeling and simulation capabilities to augment a limited number of expensive measurement and open air tests of smart weapons and related technologies. Because this program supports development programs prior to production decision, this project is funded in BA 5 - Engineering and Manufacturing Development.

(U) **Acquisition Strategy:**

Funds are executed organically in support of test and evaluation activities including studies, analyses, flight tests, model building and simulation. There are several small contracts supporting the program office.

(U) **FY 1997 (\$ in Thousands):**

-	(U)	1,088	Continued Phase IV of the weapon effectiveness evaluation
-	(U)	300	Developed models and simulation tools to support electronic engagement simulations
-	(U)	700	Continued maintenance and expansion of vulnerability/lethality and signature databases
-	(U)	1,200	Planned and conducted captive carry flight tests and signature collection for seeker/sensor evaluations and algorithm development
-	(U)	700	Conducted advanced warhead effectiveness evaluation
-	(U)	773	Continued vulnerability analysis of Suppression of Enemy Air Defense (SEAD), and Theater Missile Defense (TMD) targets
-	(U)	\$4,761	Total

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3166

## 5 - Engineering and Manufacturing Development

## 0604604F Submunitions

(U) FY 1998 (\$ in Thousands):

(U) 1,200 Complete Phase IV of the weapon effectiveness evaluation  
 (U) 458 Develop models and simulation tools to support engagement simulations  
 (U) 530 Continue maintenance and expansion of vulnerability/lethality and signature database  
 (U) 1,154 Plan and conduct captive carry flight tests and signature collection for seeker/sensor evaluations and algorithm development  
 (U) 706 Conduct advanced warhead effectiveness evaluations  
 (U) 700 Continue vulnerability analysis of Suppression of Enemy Air Defense (SEAD) and Theater Missile Defense (TMD) targets  
 (U) \$4,748 Total

(U) FY 1999 (\$ in Thousands):

(U) 1,200 Initiate Phase V of the weapon effectiveness evaluation  
 (U) 500 Develop and validate improved models and simulation for assessment of alternatives and force on force studies  
 (U) 500 Increase utility of lethality/vulnerability and signature database through conversion to migration system and addition of modern threat system data  
 (U) 1,300 Plan and conduct captive carry flight tests and signature collection for seeker/sensor evaluations and algorithm development  
 (U) 600 Characterize performance of advanced and programmable warheads to access potential for increasing lethality of weapons  
 (U) 705 Perform vulnerability analysis of upgraded/advanced Suppression of Enemy Air Defense (SEAD) and Theater Missile Defense (TMD) targets  
 (U) \$4,805 Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget (FY 1998 PB)	4,769	4,956	4,902	
(U) Appropriated Value	4,873	4,956		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-104	-162		
b. SBIR		-46		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-8		-97	
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY 1999 President's Budget	4,761	4,748	4,805	Continuing

Project 3166

Page 2 of 5 Pages

Exhibit R-2 (PE 0604604F)

942

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604604F Submunitions	3166	
(U) Change Summary Explanation:			
Funding: No Significant Changes			
Schedule: No change.			
Technical: No change.			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> : None			
(U) D. <u>Schedule Profile</u> : Not Applicable as this is a continuing test effort (target/warhead evaluation/analysis, signature tests, captive carry flight tests, are ongoing throughout the year and continue through the FYDP).			
Project 3166		Page 3 of 5 Pages	
		Exhibit R-2 (PE 0604604F)	

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3166

## 5 - Engineering and Manufacturing Development

## 0604604F Submunitions

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Program Support	911	1,146	1,208
(U) Target Support	685	460	415
(U) Warhead Range Operations	315	308	327
(U) Captive Flight Tests	250	584	556
(U) Database Support (MILES)	440	265	285
(U) Vulnerability/Effectiveness Analysis	600	622	640
(U) Warhead Evaluation	460	335	343
(U) Target Signature Tests	800	570	545
(U) Models and Simulation Tools	300	458	486
(U) Total	4,761	4,748	4,805

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Contract

Government Method/Type

Performing or Funding

Activity Vehicle

Award or Obligation

Date

Performing Activity

EAC

Project Office

EAC

Total

Prior to

FY 1997

Budget

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Program

Program

Program

Program

Program

Program

Project 3166

Page 4 of 5 Pages

Exhibit R-3 (PE 0604604F)

944

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		3166		
5 - Engineering and Manufacturing Development		0604604F Submunitions				
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total		Total Program
				Prior to FY 1997	Budget FY 1997	
Government Furnished Property: None						
Subtotal Product Development				0	0	Cont
Subtotal Support and Management				11,478	2,138	Cont
Subtotal Test and Evaluation				62,203	2,610	Cont
TOTAL				73,681	4,748	Cont
					0	Cont
					2,249	Cont
					2,556	Cont
					4,805	Cont

Project 3166

Page 5 of 5 Pages

Exhibit R-3 (PE 0604604F)

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604617F

UNCLASSIFIED

PE TITLE: Air Base Operability

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
5 - Engineering and Manufacturing Development			0604617F Air Base Operability							2895		
COST (\$ In Thousands)			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2895 Air Base Operability			2,776	1,260	2,503	2,563	2,587	0	0	0	153,384	
Quantity of RDT&E Articles			2*	0	0	0	0	0	0	0	0	

\* Two blades in different configurations costing \$171K and \$119K were purchased with FY97 3600 funding for test and evaluation. They will be fielded to provide a minimal capability for emergency ordnance clearance operations.

**(U) A. Mission Description and Budget Item Justification**

This Program Element provides capabilities to rapidly deploy, and defend and sustain airfield operations and command and control activities, which are prerequisites to establishing air superiority. These systems provide beddown for aircraft, support equipment, and forces at both main operating bases and contingency operating locations, which may have only a runway and a water source. They also offer crucial utilities, runway stabilization and repair, explosive ordnance disposal (EOD), security and reconnaissance capabilities to support aircraft deployment, launch, recovery and regeneration. Lighter-weight, rapidly deployable equipment has become essential in supporting numerous global contingencies such as DESERT SHIELD/DESERT STORM, Provide Comfort, Restore Hope, and Joint Endeavor, for security, base defense, relief efforts, and special operations throughout the world. Air Base Operability (ABO) capabilities being developed include: Joint Service (Army-led) test, evaluation and acquisition of protective vehicles to be used by Air Force explosive ordnance disposal technicians for reconnaissance and mine clearing missions; power generation and distribution systems to reduce airlift; medium shelters; and systems to stabilize soil and extend taxiways and aircraft parking aprons. The Air Base Operability (ABO) program is in RDT&E budget activity 5 - Engineering and Manufacturing Development (EMD) because it supports development, testing and evaluation of materials and equipment for contingency basing, detection and handling of explosive ordnance and tactical shelters.

**(U) Acquisition Strategy**

Many of the projects funded in the PE employ a streamlined acquisition approach, instead of traditional EMD. Whenever practical, commercial items are tested and evaluated as candidates for solutions to user needs. Instead of EMD, this approach uses a Commercial Item Performance Evaluation (CIPE) phase to determine if off-the-shelf equipment is adequate for military purposes. Initiation of the CIPE phase includes all EMD activities leading up to contract award and subsequent test and evaluation culminating in a Milestone III production decision.

Project 2895

Page 1 of 7 Pages

Exhibit R-2 (PE 0604617F)

947

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	2895
5 - Engineering and Manufacturing Development		0604617F Air Base Operability	
(U) FY 1997 (\$ in Thousands):			
- (U) \$780	Completed EMD for Rapid Ordnance Removal System (RORS).		
- (U) \$842	Initiated CIPE for Deployable Power Generation and Distribution System (DPGDS).		
- (U) \$111	Completed EMD for the UA-HHV		
- (U) \$1043	Continued other technical support.		
- (U) \$2,776	TOTAL		
(U) FY 1998 (\$ in Thousands):			
- (U) \$448	Initiate CIPE for Medium Shelter Systems.		
- (U) \$542	Continue CIPE for DPGDS.		
- (U) \$270	Continue other technical support.		
- (U) \$1,260	TOTAL		
(U) FY 1999 (\$ in Thousands):			
- (U) \$585	Complete CIPE for Medium Shelter Systems.		
- (U) \$485	Complete CIPE for DPGDS.		
- (U) \$780	Initiate CIPE for All-purpose Remote Transport System (ARTS).		
- (U) \$653	Continue other technical support.		
- (U) \$2,503	TOTAL		

Project 2895

Page 2 of 7 Pages

Exhibit R-2 (PE 0604617F)

948

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				2895
5 - Engineering and Manufacturing Development	0604617F Air Base Operability				
(U) B. <u>Program Change Summary (\$ in Thousands)</u>					
(U) Previous President's Budget		FY 1997	FY 1998	FY 1999	Total Cost
(U) Appropriated Value		2,781	1,424	2,553	153,741
(U) Adjustments to Appropriated Value		2,926	1,424		
a. Congressional Gen Reductions		-77	-133		
b. SBIR		-68	-31		
c. Omnibus and Other Threshold Reprogrammings					
c. Below Threshold Reprogramming					
d. Rescissions (Bosnia)		-5			
(U) Adjustments to Budget Years Since FY 1998 PB				-50	
(U) Current Budget Submit/FY99 Presidents Budget		2,776	1,260	2,503	153,384
(U) Change Summary Explanation:					
Funding: No significant changes.					
Schedule: No change.					
Technical: No change.					



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604617F Air Base Operability

PROJECT

2895

## (U) C. Other Program Funding Summary (\$ in Thousands)

(U) Other Procurement, AF, Other Base Maintenance and Support Program:

Mobility Equipment (0208031F) (WSC 845420)  
 Air Base Operability (0208028F) (WSC 845100)  
 HMMWV, Armored (0208028F) (WSC 823200)  
 HMMWV, Armored (0207588F) (WSC 823200)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
	21,478	24,048	35,973	35,757	37,667	13,179	13,423	Cont	Cont
	2,905	4,118	5,363	4,482	1,884	0	0	0	18,752
	3,114	3,037	0	0	0	0	0	0	6,151
	4,282	45,856	0	0	0	0	0	0	50,138

Project 2895

Page 4 of 7 Pages

Exhibit R-2 (PE 0604617F)

950

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	2895	
BUDGET ACTIVITY		PE NUMBER AND TITLE												
5 - Engineering and Manufacturing Development		0604617F Air Base Operability												
(U) D. <u>Schedule Profile</u>														
		FY 1997				FY 1998				FY 1999				
		1	2	3	4	1	2	3	4	1	2	3	4	
RAPID ORDNANCE REMOVAL SYS														
- Complete Performance Testing/No production planned					*									
MEDIUM SHELTER SYSTEMS														
- Milestone I/II Decision							X							
- CIPE Contract Award									X					
- Complete IOT&E										X				
- Milestone III Decision												X		
DEPLOY POWER GEN & DISTRO SYS														
- Initiate CIPE			*											
- Milestone I/II Decision					*									
- Award Phase I Contract								X						
- Award Phase II Contract										X				
UP-ARMORED VEHICLE (UA-HHV)														
- Complete EMD (Upper Armor)							X							
- Production Contract Award (Lower Armor)					*									
- Consign to ALC							X							
ALL-PURPOSE REMOTE TRANSPORT SYSTEM											X			
- Initiate CIPE for Attachments														

Project 2895

Page 5 of 7 Pages

Exhibit R-2 (PE 0604617F)

Project 2895

Page 5 of 7 Pages

Exhibit R-2 (PE 0604617F)

951

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604617F Air Base Operability

2895

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Contracts	430	662	1,050
(U) A&AS Support	632	245	650
(U) Other Government Agencies	661	83	150
(U) Materials/Equipment	10	0	0
(U) Other Technical Support	1,043	270	653
(U) Total	2,776	1,260	2,503

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Projects					*					*
RORS-Army	MIPR	May 96	1,569	1,569	735	780	0	0	0	1,515
Medium Shelter Systems	FFP	Aug 98	1,050	1,050	0	0	448	585	0	1,033
Deployable Power	FFP	May 98	2,238	2,238	0	842	542	485	0	1,869
UA-HHV	Mult	Sep 97	2,702	2,702	1,478	111	0	0	0	1,589
ARTS	FFP	TBD	2,800	2,800	0	0	0	780	170	950
Other ABO Projects			4,180	4,180	0	0	0	0	4,180	4,180
Sub-Total					*	1,733	990	1,850	4,350	*

Project 2895

Page 6 of 7 Pages

Exhibit R-3 (PE 0604617F)

952

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT			
5 - Engineering and Manufacturing Development		0604617F Air Base Operability						2895			
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
Performing Organizations:											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to * FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program	
Support and Management Organizations											
Various	Various		N/A	N/A	*	1,043	270	653	800	*	
Test and Evaluation Organizations											
Various	Various		N/A	N/A	*	0	0	0	0	*	
Government Furnished Property:											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
* Not traceable to previous allocation among subtotals, however total prior to FY97 is included in overall project line											
141,695 2,776 1,260 2,503 5,150 153,384											
Project 2895											
Page 7 of 7 Pages											
Exhibit R-3 (PE 0604617F)											

953

UNCLASSIFIED

BUDGET ACTIVITY		DATE
5 - Engineering and Manufacturing Development		February 1998
PE NUMBER AND TITLE		
0604617F Air Base Operability		

THIS PAGE INTENTIONALLY LEFT BLANK

PE NUMBER: 0604618F

UNCLASSIFIED

PE TITLE: Joint Direct Attack Munitions

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)											DATE		February 1998	
BUDGET ACTIVITY			PE NUMBER AND TITLE								PROJECT			
5 - Engineering and Manufacturing Development			0604618F Joint Direct Attack Munitions								3890			
COST (\$ In Thousands)			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
3890 Joint Direct Attack Munitions			32,932	21,896	12,204	1,410	1,191	1,610	0	0	293,935			
Quantity of RDT&E Articles			213/\$5904	296/\$8122*	0	0	0	0	0	0	509/\$14026			

\* These amounts reflect assets by delivery year and can not be reconciled to the dollar amounts (incremental funding) shown in any one year.

(U) **A. Mission Description and Budget Item Justification**

Desert Storm confirmed the need for a more accurate weapon delivery capability in adverse weather conditions from medium/high altitudes. Failure to satisfy this requirement will allow the enemy to continue to take advantage of the sanctuary of the weather and/or prevent US air power from prosecuting a conflict on its terms. JDAM is an Air Force and Navy munitions program to correct these shortfalls, with the Air Force as the executive service. JDAM will upgrade the existing inventory of general purpose bombs (Mk-84, BLU-109, and Mk-83/BLU-110) by integrating them with a guidance kit consisting of a Global Positioning System aided Inertial Navigation System (INS/GPS). JDAM will provide an accurate (13 meters) adverse weather capability. JDAM threshold aircraft are B-52H, F-22, and F/A-18C/D, and JDAM objective aircraft are B-2, B-1B, F-16, F-15E, and A/V-8B and other aircraft. JDAM development is a two-phased Engineering and Manufacturing Development (EMD) effort. EMD Phase I emphasized competitive design and manufacturing processes. This phase completed 10 Oct 95. EMD Phase II emphasizes full scale hardware build and flight test to verify system performance and will support OT&E. JDAM is an Air Force ACAT ID program. JDAM Low Rate Initial Production (LRIP) began in FY97. This program is funded in Budget Activity 5, EMD, due to its focus on devising an affordable design and manufacturing process.

(U) **Acquisition Strategy:**

The JDAM contract for Engineering and Manufacturing Development (EMD) Phase II is Cost Plus Award Fee. In addition, there are two Firm Fixed Price contract options for Procurement Lots 1 and 2 (LRIP). Procurement Lots 3, 4, and 5 have a Procurement Price Commitment agreement to ensure a low unit cost.

(U) **FY 1997 (\$ in Thousands):**

-	(U) \$20,325	Continued EMD prime contractor activities to include delivery of Guided Test Vehicles (GTVs) and ground test equipment for combined Developmental and Operational Testing (DT/OT) and began redesign of BLU-109 and MK-83 kits.
-	(U) \$ 3,236	Continued Support and Management tasks to define and coordinate the program activities of the prime contractor and various government development and test organizations.
-	(U) \$ 9,371	Conducted guided flight tests for DT/OT on the F/A-18, F-16, B-1, B-2, and B-52
-	(U) \$32,932	Total

Project 3890

Page 1 of 6 Pages

955

UNCLASSIFIED

Exhibit R-2 (PE 0604618F)

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604618F Joint Direct Attack Munitions

3890

## (U) FY 1998 (\$ in Thousands):

- (U) \$ 9,521 Continue EMD prime contractor activities for F/A-18, B-1, B-52, and B-2 aircraft. Initiate AV-8B and F-16 integration and testing. Continue redesign of BLU-109 and MK-83 kits.
- (U) \$ 2,943 Continue Support and Management tasks to define and coordinate the program activities of the prime contractor and various government development and test organizations.
- (U) \$ 9,432 Complete B-52 and F/A-18 and continue B-1 and B-2 aircraft flight testing. Continue F-16 aircraft guided flight tests. Test redesign of BLU-109 and MK-83 kits.
- (U) \$21,896 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 5,452 Complete EMD prime contractor activities for F/A-18, B-1, B-52, B-2 aircraft. Continue AV-8B and F-16 integration and testing.
- (U) \$ 2,354 Continue Support and Management tasks to define and coordinate the program activities of the prime contractor and various government development and test organizations.
- (U) \$ 4,398 Complete B-1 and B-2 aircraft flight testing. Start AV-8B and continue F-16 aircraft guided tests.
- (U) \$12,204 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget	36,993	19,553	12,450	300,156
(U) Appropriated Value	38,636	24,553		
(U) Adjustments to Appropriated Value				
a. Cong Reductions/Gen Reductions	-839	-944		
b. SBIR	-804	-1,713		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-4,061		-246	
(U) Adjustments to Budget Years Since FY 1998 PB			12,204	
(U) Current Budget Submit/FY99 President's Budget	32,932	21,896		293,935

Project 3890

Page 2 of 6 Pages

Exhibit R-2 (PE 0604618F)

956

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604618F Joint Direct Attack Munitions	3890	
(U) Change Summary Explanation:			
Funding: FY 1997 Congressional Rescission of \$4M for Bosnia Supplemental. FY98 Congressional transfer of \$5M from Procurement (3011) to fund redesign efforts. FY97 and FY98 changes also due to Congressional General Reductions and SBIR. FY99 change due to changes in inflation projections. In FY98, \$0.2M pending reprogramming to fund higher Air Force priorities and \$0.7M pending reprogramming for additional SBIR reductions.			
Schedule: N/A			
Technical: N/A			
(U) C. Other Program Funding Summary (\$ in Thousands)			
(U) Appropriation: Ammunition Procurement, Air Force, Program Title: JDAM, PE 27583F, BA 01, BP 35, P-1 Line 20			
(U) Ammunition Procurement			
	FY 1997	FY 1998	FY 1999
	FY 2000	FY 2001	FY 2002
	FY 2003		
	To	Compl	Total
	23,010	54,949	53,157
		127,999	246,016
		216,298	210,009
		427,814	1,359,252

UNCLASSIFIED



**UNCLASSIFIED**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 5 - Engineering and Manufacturing Development

0604618F Joint Direct Attack Munitions

PROJECT  
3890

**(U) D. Schedule Profile**

	FY 1997		FY 1998		FY 1999
1	2	3	2	3	2
			4	1	4
					3
					4

(U) LRIP (Lot 1) Option

(U) LRIP (Lot 2) Option

(U) Milestone III (2000 lb)

**X**

**(U) MK-84 Schedule**

(U) DT/OT

### (U) Operational Evaluation

(OPEVAL) Start/Finish

## (U) Initial Operational Test & Eval

(IOT&amp;E) Start/Finish

**(U) BLU-109 Schedule**

**(U) DT/OT Start/Finish**

(U) OPEVAL Start/Finish

(U) OT&E Start/Finish

**(U) MK-83 Schedule**

**(U) DT Flight Tests Start**

(U) DT Flight Tests Finish

X

X

**(U) A/C Integration**

**(U) Threshold Fighter/Bomber**

(U) -- 2000 lb Complete

(U) -- 1000 lb Start

(U) -- 1000 lb Finish - 1<sup>st</sup> Otr FY03

X

X

## Project 3890

Page 4 of 6 Pages

Exhibit R-2 (PE 0604618F)

958

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604618F Joint Direct Attack Munitions		3890
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>			
		<u>FY 1997</u>	<u>FY 1998</u>
(U) Primary Hardware Development		20,325	9,521
(U) Test & Evaluation		9,371	5,452
(U) Engineering & Prog Mgt Support		3,236	4,398
(U) Total		32,932	2,943
			21,896
			12,204
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>			
<b>Performing Organizations:</b>			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC
			Project Office EAC
			Total Prior to FY 1997
			Budget FY 1997
			Budget FY 1998
			Budget FY 1999
			Budget to Complete
			Total Program
<b>Product Development Organizations</b>			
Prime Contractors	CPAF	Oct-95	159,439
Boeing (St Louis, MO)			166,672*
Lockheed/Martin (Orlando, FL; FY94/95 Only)			129,425
Conceptual Studies	Various	Various	19,469
			9,521
			5,452
			2,805
			166,672
			22,427
* Project Office EAC includes projected increase of contract scope.			
Project 3890	Page 5 of 6 Pages	Exhibit R-3 (PE 0604618F)	

959

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3890

## 5 - Engineering and Manufacturing Development

## 0604618F Joint Direct Attack Munitions

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Support and Management Organizations</u>										
Engineering Spt.	CPAF	Oct 96	12,162	12,162	10,495	583	900	184	0	12,162
TAMS Contractor	CPAF	Oct 96	4,615	4,615	3,090	497	700	328	0	4,615
Program Office	Various	Various	N/A	N/A	12,788	2,156	1,343	1,842	377	18,506
<u>Test and Evaluation Organizations</u>										
Aircraft	Various	Various	N/A	N/A	12,276	355	279	2,214	1,013	16,137
SPO/PMA Supt.	Various	Various	N/A	N/A	19,552	8,981	8,838	2,184	16	39,571
Flight Testing	Various	Various	N/A	N/A	9,210	35	315	0	0	9,560
Ground Testing	Various	Various	N/A	N/A	4,285	0	0	0	0	4,285
GFE	Various	Various	N/A	N/A						
Government Furnished Equipment: Not Applicable										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project										

Project 3890

Page 6 of 6 Pages

Exhibit R-3 (PE 0604618F)

960

UNCLASSIFIED

PE NUMBER: 0604703F

UNCLASSIFIED

PE TITLE: Aeromedical Systems Development

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		0604703F Aeromedical Systems Development							February 1998	2866
5 - Engineering and Manufacturing Development		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
COST (\$ In Thousands)										
2866 Aeromedical/Casualty Care Systems Dev		4,498	3,907	3,336	564	95	0	0	0	TBD
Quantity of RDT&E Articles		0	7/1,350*	8/1,104*	0	0	0	0	0	N/A

\* Note: The 7 items to be bought in FY98 are 6 Spinal Cord Injury Transport System (SCITS) units at \$138 thousand each, and 1 Theater Medical Information Program (TMIP) unit at \$522 thousand. The 8 items to be bought in FY 99 are 8 SCITS units at \$138 thousand each.

**(U) A. Mission Description and Budget Item Justification**

The Program Element provides tactical, strategic, and covert aeromedical evacuation systems and medical treatment equipment to meet unique Air Force medical readiness and operational requirements. Note: This program is in budget activity 5 - Engineering and Manufacturing Development because it supports development of systems for treatment, evacuation, and prediction of wartime casualties in a conventional or non-conventional warfare environment.

**(U) Acquisition Strategy**

All major projects within this Program Element were awarded under full and open competition.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604703F Aeromedical Systems Development	2866	
(U) FY 1997 (\$ in Thousands):			
- (U) \$44	Transportable Blood Transshipment Center (TBTC) - Delivered production units and provided program/engineering support.		
- (U) \$6	SCITS - Developed acquisition strategy and obtained Milestone I/II decision approval to support tri-Service requirements.		
- (U) \$326	THREAT Model - Integrated nuclear, biological and chemical modules for Build 2, completed integration testing, and delivered Build 3.		
- (U) \$1	Continuous Intermittent Suction Unit (CISU) - Completed operational testing.		
- (U) \$808	CHATH/CHAMP - Completed qualification testing.		
- (U) \$128	Civil Reserve Air Fleet Aeromedical Evacuation Ship Set (CRAF-AESS) - Developed Patient Loading System (PLS) support equipment.		
- (U) \$1,067	TMIP - Defined, prototyped and demonstrated a deployable medical information infrastructure; planned and initiated an acquisition strategy for the same.		
- (U) \$518	Aeromedical Systems Analysis - Conducted foundational studies and analyses, requirements analyses, and product demonstrations to meet operational needs, and defined acquisition strategies and baselines for potential system solutions to Air Force Medical Service materiel needs identified through the Air Force Surgeon General's modernization planning process.		
- (U) \$1,600	Funded proportional efforts of Human Systems Center, System Program Office, and Technical Engineering and Management Support contractor.		
- (U) \$4,498	TOTAL		
(U) FY 1998 (\$ in Thousands):			
- (U) \$63	TBTC - Program/Engineering Support for production item activation.		
- (U) \$1036	SCITS - Begin EMD.		
- (U) \$324	CHATH/CHAMP - Complete operational test and evaluation (OT&E), meet initial operational capability (IOC), obtain Milestone III decision approval and exercise production option.		
- (U) \$98	CRAF-AESS - Support production decision and Initial Operational Capability (IOC) for the Patient Loading System.		
- (U) \$1,395	TMIP-Air Force - Integrate and test a deployable medical information infrastructure; plan and initiate a deployment strategy for the same; investigate and plan for pre-planned product improvements.		
- (U) \$45	Aeromedical Systems Analysis - Conduct foundational studies and analyses, requirements analyses, and product demonstrations to meet operational needs, and define acquisition strategies and baselines for potential system solutions to Air Force Medical Service materiel needs identified through the Air Force Surgeon General's modernization planning process.		
- (U) \$946	Fund proportional efforts of Human Systems Center, System Program Office, and Technical Engineering and Management Support contractor.		
- (U) \$3,907	Support production unit deliveries for CISU.		
- (U) \$3,907	TOTAL		

Project 2866

Page 2 of 7 Pages

Exhibit R-2 (PE 0604703F)

Project 2866

Page 2 of 7 Pages

Exhibit R-2 (PE 0604703F)

962

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604703F Aeromedical Systems Development	2866	
(U) FY 1999 (\$ in Thousands):			
- (U) \$1,585	SCITS - Conduct OT&E and complete EMD.		
- (U) \$270	CHATH/CHAMP - Program/Engineering support for production item activation.		
- (U) \$599	TMIP-AF - Execute medical information infrastructure deployment; integrate and test planned product improvements.		
- (U) \$15	CRAF-AESS - Support production effort of the Patient Loading System (PLS).		
- (U) \$77	Aeromedical Systems Analysis - Conduct foundational studies and analyses, requirements analyses, and product demonstrations to meet operational needs, and define acquisition strategies and baselines for potential system solutions to Air Force Medical Service materiel needs identified through the Air Force Surgeon General's modernization planning process. Prepare RFP for Advanced Hybrid Oxygen System - Medical (AHOS-M).		
- (U) \$790	Fund proportional efforts of Human Systems Center, System Program Office, and Technical Engineering and Management Support contractor, including the CISU production effort. Begin transition effort from research effort, exploring the potential technologies for future EMD efforts on the Advanced Hybrid Oxygen System - Medical (AHOS-M).		
- (U) \$3,336	TOTAL		

Project 2866

Page 3 of 7 Pages

Exhibit R-2 (PE 0604703F)

Project 2866

Page 3 of 7 Pages

Exhibit R-2 (PE 0604703F)

963

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2866

## 5 - Engineering and Manufacturing Development

## 0604703F Aeromedical Systems Development

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional Gen Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogramming

d. Below Threshold Reprogramming

e. Rescissions

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

(U) Change Summary Explanation:

Funding:

FY97: \$1.2 Million was approved by Congress as an Omnibus source; Funds were reduced to meet higher AF requirements.  
FY99: Restores content and funds used for FY97 Omnibus source.

Schedule: No change.

Technical: No change.

(U) C. Other Program Funding Summary (\$ in Thousands)(U) Other Procurement, AF, PE 28038F, Other  
Base and Maintenance Support, Medical/Dental  
EquipmentFY 1997  
11,567FY 1998  
7,406FY 1999  
9,112FY 2000  
9,797FY 2001  
8,082FY 2002  
4,630FY 2003  
4,580To  
Compl  
ContTotal  
Cost  
Cont

Project 2866

Page 4 of 7 Pages

Exhibit R-2 (PE 0604703F)

964

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>						
BUDGET ACTIVITY	DATE February 1998 PROJECT 2866					
<b>5 - Engineering and Manufacturing Development</b>	<b>0604703F Aeromedical Systems Development</b>					
(U) D. Schedule Profile	PE NUMBER AND TITLE					
	FY 1997	FY 1998	FY 1999			
	1	2	3	4	1	2
	3	4	1	2	3	4
TRANSPORTABLE BLOOD TRANSSHIPMENT CENTER						
- FOC			X			
SPINAL CORD INJURY TRANSPORT SYS						
- Begin EMD			X			
- Begin OT&E						X
THREAT MODEL						
- FOC		*				
CONT/INTERMIT SUCTION UNIT						
- Complete OT&E		*				
- Begin Production						
- Complete Production					X	
CHATH/CHAMP						
- Complete DT&E				*		
- Complete OT&E					X	
- Milestone III Decision					X	
- Begin Production					X	
CRAF AES						
- IOT&E for PLS					X	
- IOC for PLS						
- FOC for PLS					X	
AHOS-M						
- Prepare RFP						X
TMP-AF						
- Define Sys performance characteristics						X
- Integrate and test system solutions						



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2866

## 5 - Engineering and Manufacturing Development

0604703F Aeromedical Systems Development

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Engineering and Manufacturing Development	1,280	1,819	1,701
(U) Development/Operational Test and Evaluation	157	36	115
(U) Contractor Engineering Support	1,889	1,258	941
(U) Miscellaneous (System Program Office Operations)	422	211	165
(U) Mission Support/Supplies	750	583	414
(U) Total	4,498	3,907	3,336

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
TBTC-A.D. Little	CPAF/FFP	Mar 91	11,033	13,289	13,134	0	0	0	0	13,134
CHATH/CHAMP	CPFF	Dec 94	2,989	2,989	2,989	0	0	0	0	2,989
Ph I-EASI/Guild										
CHATH/CHAMP	CPFF	Aug 95	3,853	3,853	3,609	287	0	0	0	3,896
Phase II-										
ERDC/EASI										
SCITS	TBD	TBD	TBD	TBD	0	0	784	1,302	466	2,552
CRAF (PLS)	TBD	TBD	TBD	TBD	0	40	0	0	0	40
WAR-MED PS-BDM	CPAF	May 96	6,159	6,159	6,159	0	0	0	0	6,159
TMIP-AF	Various	Various	TBD	TBD	0	808	1,035	400	120	2,363
THREAT-BDM	CPFF	Aug 94	1,453	1,453	1,308	145	0	0	0	1,453
New Business-	Various	Various			17,477	0	0	0	0	17,477

Project 2866

Page 6 of 7 Pages

Exhibit R-3 (PE 0604703F)

966

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT			
BUDGET ACTIVITY		PE NUMBER AND TITLE			0604703F Aeromedical Systems Development		2866			
5 - Engineering and Manufacturing Development										
Contractor or Government	Method/Type or Funding	Award or Obligation	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Activity	Vehicle	Date	EAC	EAC	532	810	583	414	0	2,339
Mission Support/Supplies	Various	Various			45,208	2,090	2,402	2,116	586	52,402
Sub-Total										
Support/Mgmt Organizations					3,061	1,829	1,258	941	0	7,089
TEAMS-OpTech, Delivery		Various								
McDonald Tech, Order										
MTC										
SPO Operations	Various	Various			3,767	422	211	165	73	4,638
Sub-Total					6,828	2,251	1,469	1,106	73	11,727
Test and Evaluation Organizations										
Aberdeen Prov. Grnd					2	157	36	0	0	195
Armstrong Lab					0	0	0	77	0	77
Other					138	0	0	37	0	175
Sub-Total					140	157	36	114	0	447
Government Furnished Property:		None								
Subtotal Product Development					45,208	2,090	2,402	2,116	586	52,402
Subtotal Support and Management					6,828	2,251	1,469	1,106	73	11,727
Subtotal Test and Evaluation					140	157	36	114	0	447
Total Project					52,176	4,498	3,907	3,336	659	64,576

Project 2866

Page 7 of 7 Pages

Exhibit R-3 (PE 0604703F)

Project 2866

Page 7 of 7 Pages

Exhibit R-3 (PE 0604703F)

967

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604706F

UNCLASSIFIED

PE TITLE: Life Support Systems

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604706F Life Support Systems								412A	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
412A Life Support Systems		10,289	4,301	3,744	3,747	3,848	537	0	0	28,466	
Quantity of RDT&E Articles		53/426K*	45/270*	4/560K*	158/636K*	0	0	0	0	260	

\*Fiscal Year (FY) 1997: (2) Advanced Concept Ejection Seats (ACES II) at 60K per item; (51) Advanced Technology Concept Anti-Gravity Suits (ATAGS) at 6K per item. FY1998: (45) ATAGS at 6K per item. FY1999: (4) ACES II ejection seats at 140K per item (full-scale configuration). FY2000: (79) tractor rockets for ACES II at 4K per item; (27) Enhanced Drogue rocket containers for ACES II, at 9K per item; (25) parachutes for ACES II at 2K per item; (27) cable assemblies for ACES II at 1K per item.

(U) A. Mission Description and Budget Item Justification

This project provides for Engineering, Manufacturing, and Development (EMD) of life support equipment and subsystems to satisfy operational command requirements for improved life support equipment. This project also provides for the continuing development of life support items and subsystems such as the following: flight helmets, oxygen breathing equipment for aviators, anti-G coveralls, survival radios, night vision devices, active/passive noise reduction devices, parachute releases, and aircraft ejection seats. Program management support includes tasks to assess deficiencies of currently fielded equipment. It also provides for the transitions of new technology into EMD and to support all current life support projects. Life Support System's contractors are ITT Electro-Optical Products Division, Krug Life Sciences, Boeing Co., System Research Laboratories (SRL), and Mustang Survival. Life Support efforts result from full and open competition among qualified vendors to select a single primary source for EMD and follow-on production.

(U) Acquisition Strategy: Acquisition strategy is incorporated at the project level.

Project 412A

Page 1 of 7 Pages

Exhibit R-2 (PE 0604706F)

969

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604706F Life Support Systems

PROJECT

412A

(U) FY 1997 (\$ in Thousands):

- (U) \$4,821	Laser Eye Protection (LEP) - for dye-based dielectric coated aircrew visors and technology demonstrations
- (U) \$1,482	ACES II Component Improvement Program (CIP) - technology demonstrations
- (U) \$500	Continued reviews and audits for Night Vision System (NVS) EMD
- (U) \$2,256	Continued Government Developmental Testing & Evaluation (DT&E) & Initial Operational Testing & Evaluation (IOT&E) on NVS test assets - (ejection sled testing)
- (U) \$1,107	Initiated EMD for the Advanced Technology Concept Anti-Gravity Suit (ATAGS) design for all fighter aircraft
- (U) \$123	Program Management/Technical Support/Travel/Test & Evaluation in support of AF Life Support Systems - (MAC-10/100 - anti-exposure suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles (PNVGs), Joint Helmet Mounting Cueing System (JHMCS), Integrated Chin-Nape Strap (ICNS), Active Noise Reduction (ANR), Universal Water Activated Release Systems (UWARS), Low Profile Parachute (LPP), Female Aircrew Member Bladder Relief Capability (FAMBRRC), Combat Survivor Evader Locator (CSEL), Automatic Life Preserver, F-22 Integration of Current Life Support Systems Evaluation, Joint Aircrew Survival Vest (AIRSAVE), Visually Coupled Targeting and Acquisition System (VCATS), HGU-55P Lightweight Helmet, Laser Eye Protection (LEP), ACES II Advanced Recovery Sequencer (ARS).
- (U) \$10,289	Total

(U) FY 1998 (\$ in Thousands):

- (U) \$700	Complete NVS EMD contract, DT&E (combined with IOT&E) and production support costs
- (U) \$1,216	Initiate Air Force funded EMD program to continue development for ACES II CIP - follow-on work to FY97 Congressional add
- (U) \$1,112	Continue ATAGS EMD
- (U) \$1,000	Congressional add for ejection seats
- (U) \$273	Program Management/Technical Support/Travel/Test & Evaluation in support of AF Life Support Systems - (MAC-10/100 - anti-exposure suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles (PNVGs), Joint Helmet Mounting Cueing System (JHMCS), Integrated Chin-Nape Strap (ICNS), Active Noise Reduction (ANR), Universal Water Activated Release Systems (UWARS), Low Profile Parachute (LPP), Female Aircrew Member Bladder Relief Capability (FAMBRRC), Combat Survivor Evader Locator (CSEL), Automatic Life Preserver, F-22 Integration of Current Life Support Systems Evaluation, Joint Aircrew Survival Vest (AIRSAVE), Visually Coupled Targeting and Acquisition System (VCATS), HGU-55P Lightweight Helmet, Laser Eye Protection (LEP), ACES II Advanced Recovery Sequencer (ARS).
- (U) \$4,301	Total

Project 412A

Page 2 of 7 Pages

Exhibit R-2 (PE 0604706F)

970

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604706F Life Support Systems	February 1998	412A
<p>(U) FY 1999 (\$ in Thousands):</p> <p>- (U) \$3,671 Continue ACES II CIP EMD</p> <p>- (U) \$43 Complete ATAGS EMD and production support costs</p> <p>- (U) \$30 Program Management/Technical Support/Travel/Test &amp; Evaluation in support of AF Life Support Systems - (MAC-10/100 - anti-exposure suit, Joint Strike Fighter (JSF) program, Oxygen Generating Systems (OGS), Panoramic Night Vision Goggles (PNVGs), Joint Helmet Mounting Cueing System (JHMCS), Integrated Chin-Nape Strap (ICNS), Active Noise Reduction (ANR), Universal Water Activated Release Systems (UWARS), Low Profile Parachute (LPP), Female Aircrew Member Bladder Relief Capability (FAMBRIC), Combat Survivor Evader Locator (CSEL), Automatic Life Preserver, F-22 Integration of Current Life Support Systems Evaluation, Joint Aircrew Survival Vest (AIRSAVE), Visually Coupled Targeting and Acquisition System (VCATS), HGU-55P Lightweight Helmet, Laser Eye Protection (LEP), Night Vision System (NVS), ACES II ARS.</p> <p>- (U) \$3,744 Total</p>			

Project 412A

Page 3 of 7 Pages

Exhibit R-2 (PE 0604706F)

971

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998						
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT							
5 - Engineering and Manufacturing Development	0604706F Life Support Systems	412A							
(U) B. Program Change Summary (\$ in Thousands)									
(U) Previous President's Budget	FY 1997	FY 1998	FY 1999						
(U) Appropriated Value	10,391	3,726	3,819						
(U) Adjustments to Appropriated Value	10,863	*4,726							
a. Congressional General Reduction	-240	-330							
b. Omnibus & Other Above Threshold Reprogramming									
c. Small Business Innovative Research (SBIR)	-232	-95							
d. Below Threshold Reprogramming (BTR)	-85								
e. Rescissions	-17								
(U) Adjustments to Budget Years since FY98 PB			-75						
(U) Current Budget Submit/99 President's Budget	10,289	4,301	3,744						
			26,466						
(U) Change Summary Explanation:									
Funding: FY97 \$85K reprogrammed to PE27268F, Aircraft Engine Component Improvement Program. *FY98 \$1M Congressional add for ejection seats -- this Congressional add is in the process of being reclassified to PE603231F, Crew Systems Technology, per Congressional request. LEP effort was terminated due to the lack of procurement funds and Air Force requirements met by parallel Navy program. Of the \$1.8M allocated for LEP, \$1.4M is reallocated to ACES II CIP and \$400K to F-22 ATAGS development. FY99 \$75K reduction for inflation adjustment.									
Schedule: Enhanced drogue tractor rocket development was delayed due to facility scheduling problems by the contractor. NVS DT/OT delays due to range schedule conflicts.									
Technical: No Change									
(U) C. Other Program Funding Summary (\$ in Thousands)									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Complete	Total Cost
NATO Cooperative R&D PE 0603790D	0	500	0	0	0	0	0	0	500
(OSD funded) ACES II CIP									
NATO Cooperative R&D PE 0603790F	0	0	1500	1500	0	0	0	0	3000
(AF funded) ACES II CIP									
Project 412A		Page 4 of 7 Pages		Exhibit R-2 (PE 0604706F)					

972

UNCLASSIFIED

DATE **February 1998**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

## BUDGET ACTIVITY

## 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

**0604706F Life Support Systems**

## PROJECT

**412A**

(U) D. Schedule Profile		FY1997		FY1998		FY1999
		1 2 3	4	1 2 3	4	1 2 3
(U) Started NVS Contractor Qual Test	*					
(U) Started UWARS Production Deliveries						
(U) Initiated ACES II CIP - preliminary design and test	*					
(U) Initiated LEP program (AL & Navy)	*					
(U) Awarded F-22 ATAGS Contract			*			
(U) Completed Government Conducted NVS DT&E / OT&E				*		
(U) Production Award for NVS				X		
(U) ACES II Pre-EMD				X		
(U) Receive ATAGS OT&E					X	
(U) EMD award for ACES II CIP					X	
(U) NVS Production First Delivery						X
(U) Complete UWARS Prod. Deliveries						X
(U) Complete detail design for ACES II						
(U) Start Qual. Testing for ACES II						

Page 5 of 7 Pages

Exhibit R-2 (PE 0604706F)

973

**UNCLASSIFIED**



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
412A

## 5 - Engineering and Manufacturing Development

## 0604706F Life Support Systems

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Contracts	6,797	1,434	1,226
(U) Technical Engineering Support	1,475	1,061	964
(U) Travel	204	239	193
(U) Government Testing	1,394	43	1,100
(U) Program Management/Technical Support and Misc.	419	1,524	261
(U) Total	10,289	4,301	3,744

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
ITT-NVS	C/CPFF	18 Jan 93	14,081	14,081	13,630	270	181	0	0	14,081
KRUG-ATAGS	SS/FFP	7 July 97	424	424	0	424	0	0	0	424
Mustang-ATAGS	SS/FFP	Aug 97	749	749	0	271	478	0	0	749
LEP - (AL/Navy)	C/CPFF	Jun 97	4,552	4,552	0	4,552	0	0	0	4,552
MDA-Enhanced Drogue	SS/CPFF	Jun 97	1,130	1,130	0	1,130	0	0	0	1,130
Boeing-ACES II Pre-EMD	SS/CPFF	Feb 98	275	275	0	0	275	0	0	275
MDA-ACES II	SS/FFP	Sep 97	1,010	1,010	0	150	350	510	0	1,010
Boeing-ACES II EMD	SS/CPFF	Nov 98	2,836	2,836	0	0	0	716	2120	2,836
SRL-ATAGS	SS/CPFF	Dec 97	150	150	0	0	150	0	0	150
DT&E Support										

Project 412A

Page 6 of 7 Pages

Exhibit R-3 (PE 0604706F)

974

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE										412A
5 - Engineering and Manufacturing Development		0604706F Life Support Systems										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
<u>Support and Management Organizations</u>												
Program Management Support			4,053	4,053	2,132	419	524	261	717	4,053		
Travel			1,381	1,381	347	204	239	193	398	1,381		
Tech Eng & Acq			8,387	8,387	2,560	1,475	1,061	964	2,327	8,387		
Cong. add for ejection seats (being reclassified to PE 603231F)												
							1,000			1,000		
<u>Test and Evaluation Organizations</u>												
AFMTC		Proj Ord-Various	4,361	4,361	3,103	1,215	43	0	0	4,361		
AL/CF		Various	179	179	0	179	0	0	0	179		
Holloman		Various	3,471	3,471	0	0	0	1,100	2,371	3,471		
Pax River		Various	233	233	0	0	0	0	233	233		
<u>Government Furnished Property:</u>												
		None										
Subtotal Product Development			25,207	25,207	13,630	6,797	1,434	1,226	2,120	25,207		
Subtotal Support and Management			13,821	13,821	5,039	2,098	1,824	1,418	3,442	13,821		
Subtotal Test and Evaluation			8,244	8,244	3,103	1,394	43	1,100	2,604	8,244		
Cong. add for ejection seats (being reclassified to PE 603231F)												
							1,000			1,000		
Total Project			47,272	47,272	21,772	10,289	4,301	3,744	8,166	48,272		

Project 412A

Page 7 of 7 Pages

Exhibit R-3 (PE 0604706F)

975

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604708F

UNCLASSIFIED

PE TITLE: Civil, Fire, Environmental, Shelter

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter									
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		2,613	2,526	2,715	2,768	2,824	2,864	2,917	0	TBD	Continuing
2054 Aerospace Facilities Engineering Development		672	0	0	0	0	0	0	0	0	1,570
2505 Aircraft Firefighting Suppression And Rescue		1,129	2,339	2,528	2,585	2,634	2,672	2,722	0	TBD	Continuing
2674 Tactical Shelters		152	187	187	183	190	192	195	0	TBD	Continuing
3788 Environmental Quality		660	0	0	0	0	0	0	0	0	2,739

**(U) A. Mission Description and Budget Item Justification**

This program funds the development, testing and evaluation of materials, equipment and procedures in the following areas: (1) Aircraft Fire Fighting, Suppression and Rescue and Civil Engineer (CE) Readiness, and (2) Tactical Shelters. Overall CE readiness is supported by multimedia training systems for Fire Fighting, CE readiness (Disaster Preparedness, Chem/Bio) and Force Protection (Explosive Ordnance Disposal (EOD)) by developing interactive training scenarios which simulate hazardous situations, allows both training and testing of response capabilities, and complements field training while reducing time, cost and direct exposure to hazards. Develops new concepts and technology applications for fire fighting, suppression and rescue to provide rapidly deployable capabilities to support bare base, contingency operating areas or main operating bases, and to reduce fire risks to personnel and resources. 2) Tactical Shelters is the USAF portion of a tri service effort to develop standardized, low maintenance, highly survivable shelters and shelter accessories that are easily mobilized and compatible with air, sea and land transport systems. These products will effectively support high mobility aircraft support, command and control, communications, medical, and data processing units for the tactical and strategic forces. These shelters also optimize the latest enhancements of force protection technology. This program is in budget activity five, Engineering and Manufacturing Development, because it takes emerging technologies and concepts and develops them for Air Force use.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604708F Civil, Fire, Environmental, Shelter

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget	2,617	2,698	2,770	
(U) Appropriated Value	2,736	2,698		
(U) Adjustments to Appropriated Value				
a. Cong/General Reductions	-69	-107		
b. SBIR	-50	-65		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-4			
(U) Adjustments to Budget Years Since FY 1998 PB			-55	
(U) Current Budget Submit/FY 1999 President's Budget	2,613	2,526	2,715	

(U) Change Summary Explanation:

Funding: None.

Schedule: None

Technical: None

(U) C. Other Program Funding Summary (\$ in Thousands) N/A(U) D. Schedule Profile N/A

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter								2054	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
2054 Aerospace Facilities Engineering Development		672	0	0	0	0	0	0	0	0	1,570

**(U) A. Mission Description and Budget Item Justification**

Develops equipment, materials, and procedures to improve the operational effectiveness of aerospace facilities.

**(U) Acquisition Strategy:**

EMD for the program completed in FY97 and program transition to PE 28031 for procurement.

**(U) FY 1997 (\$ in Thousands):**

- (U) \$547 Completed EMD for Small Shelters/Environmental Control Units (ECUs)  
 - (U) \$125 Continued other technical support  
 - (U) \$672 Total

**(U) FY 1998 (\$ in Thousands):**

- (U) \$0  
 - (U) \$  
 - (U) \$0 Total

**(U) FY 1999 (\$ in Thousands):**

- (U) \$0  
 - (U) \$  
 - (U) \$0 Total

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604708F Civil, Fire, Environmental, Shelter

PROJECT  
2054

## 5 - Engineering and Manufacturing Development

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost

1,570

FY 1997

689

FY 1998

0

FY 1999

0

FY 2000

0

(U) Previous President's Budget FY98 PB

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

672

1,570

(U) Change Summary Explanation:

Funding: FY 97 Congressional reductions of \$17K

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands) N/ATotal  
CostTo  
Compl

FY 1997

(U) Other Procurement, AF, Other Base  
Maintenance and Support Program:  
Mobility Equipment (0208031F) (WSC 845420)

21,478

FY 1998

24,048

FY 1999

35,973

FY 2000

35,757

FY 2001

37,667

FY 2002

13,179

FY 2003

13,423

Cont

Project 2054

Page 4 of 21 Pages

Exhibit R-2 (PE 0604708F)

980

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

## BUDGET ACTIVITY

## 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

**0604708F Civil, Fire, Environmental, Shelter**

## PROJECT

2054

**(U) D. Schedule Profile**

## SMALL SHELTER SYSTEMS

### - Milestone I/II Decision

### - Award Evaluation Contract with

## Production Options

### - Milestone III Decision

<u>FY 1997</u>	3
2	

—

X

FY 1998	2	3
---------	---	---

**Keywords:**

X

	FY 1999
2	3

1

4  
23

33

Project 2054

Page 5 of 21 Pages

Exhibit R-2 (PE 0604708F)

981

**UNCLASSIFIED**



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604708F Civil, Fire, Environmental, Shelter

2054

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Contracts			
(U) A&AS Support	287		
(U) Other Government Agencies	260		
(U) Materials/Equipment			
(U) Other Technical Support	125		
(U) Total	672	0	0

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Small Shelters/ECUs	C/FFP	Aug 97	1,500	1,500	748	547	0	0	0	1,295
<u>Support and Management Organizations</u>										
N/A			400	400	150	125	0	0	0	275
<u>Test and Evaluation Organizations</u>										
N/A					0	0	0	0	0	0
Government Furnished Property: None										

Project 2054

Page 6 of 21 Pages

Exhibit R-3 (PE 0604708F)

982

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter	2054	

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Subtotal Product Development					748	547	0	0	0	1,295
Subtotal Support and Management					150	125	0	0	0	275
Subtotal Test and Evaluation						0	0	0	0	0
Total Project					898	672	0	0	0	1,570

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter								2505	
	COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
2505	Aircraft Firefighting Suppression And Rescue	1,129	2,339	2,528	2,585	2,634	2,672	2,722	0	TBD	Continuing
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>Develops improved civil engineering, fire fighting suppression and rescue equipment, materials, and methods to increase fire protection, readiness, force protection, mobility, and disaster preparedness effectiveness and training.</p> <p>(U) <u>Acquisition Strategy:</u> Courseware materials will continue to be developed, tested, modified and readied for production and procurement by field units.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u>            - (U) \$ 863 Continued courseware development of civil engineer (CE)/Firefighter Multimedia Training System (FMTS) systems.            - (U) \$ 237 Continued commercial technology exploitation.            - (U) \$ 29 Other technical support.            - (U) \$ 1,129 Total</p> <p>(U) <u>FY 1998 (\$ in Thousands):</u>            - (U) \$1,728 Continued courseware development of CE/FMTS systems.            - (U) \$ 146 Continued commercial technology exploitation.            - (U) \$ 465 Other technical support.            - (U) \$2,339 Total</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u>            - (U) \$2,040 Continued courseware development of CE/FMTS systems.            - (U) \$ 140 Continued commercial technology exploitation.            - (U) \$ 348 Other technical support.            - (U) \$2,528 Total</p>											

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## February 1998

## PROJECT

## 5 - Engineering and Manufacturing Development

**0604708F Civil, Fire, Environmental, Shelter**

**2505**

**(U) B. Program Change Summary (\$ in Thousands)**

	FY 1997	FY 1998	FY 1999	Total
(U) Previous President's Budget FY98PB				
(U) Appropriated Value	1,049	1,060	1,098	Cost
(U) Adjustments to Appropriated Value	1,116	2,496		Cont
a. Cong/General Reductions	38	-96		
b. SBIR	-25	-61		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Years Since FY 1998 PB			690	
(U) Current Budget Submit/FY1999 President's Budget	1,129	2,339	2,528	Cont

**(U) Change Summary Explanation:**

**Funding:** None.

**Schedule: N/A**

**Technical:** N/A

(U)	C.	Other Program	Funding Summary (\$ in Thousands)	N/A

**(U) D. Schedule Profile**

(U) D.	Schedule Profile		FY 1997	FY 1998	FY 1999
		1	2    3	1    2    3	4
	CE MULTIMEDIA TRAINING SYS				
-	Complete B1B/F-16/C-17/747/F-18	X			
-	Complete C-130/KC-135/RD-135				
-	Complete F-117				
-	Complete CRAF Aircraft			X	
	FIRE COMMERCIAL TECHNOLOGY EXPLOITATION				
-	Complete FY97 AFOTEC Evaluation		X		
-	Complete FY98 AFOTEC Evaluation				X

Project 2505

Page 9 of 21 Pages

Exhibit R-2 (PE 0604708F)

985

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 5 - Engineering and Manufacturing Development

0604708F Civil, Fire, Environmental, Shelter

2505

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Contracts	500	1,353	1,200
(U) A&AS Support	352	324	780
(U) Other Government Agencies	175	177	180
(U) Materials/Equipment	73	20	20
(U) Other Technical Support	29	465	348
(U) Total	1,129	2,339	2,528

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

Product Development Organizations

Multimedia	Mult	Cont	14,500	14,500	498	863	1,728	2,040	Cont	Cont
Training Systems										
Fire Commercial	Mult	Cont	1,500	1,500	250	85	31	60	Cont	Cont
Technology										
Exploitation										

Support and Management Organizations

Various			1,950	1,950	150	29	465	348	Cont	Cont
---------	--	--	-------	-------	-----	----	-----	-----	------	------

Test and Evaluation Organizations

Various			750	750	0	152	115	80	Cont	Cont
---------	--	--	-----	-----	---	-----	-----	----	------	------

Government Furnished Property: None

Project 2505

Page 10 of 21 Pages

Exhibit R-3 (PE 0604708F)

986

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
5 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter	2505		

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Subtotal Product Development					748	948	1,759	2,100	Cont	TBD
Subtotal Support and Management					150	29	465	348	Cont	TBD
Subtotal Test and Evaluation					0	152	115	80	Cont	TBD
Total Project					898	1,129	2,339	2,528	Cont	TBD

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604708F Civil, Fire, Environmental, Shelter

PROJECT

2674

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
2674 Tactical Shelters	152	187	187	183	190	192	195	0	TBD	Continuing

(U) A. Mission Description and Budget Item Justification

Provides reliable, cost effective tactical shelters required to ensure the success of Air Force missions, provides Air Force membership in the DOD Tactical Shelter Program, and provides technology insertion for shelter development.

(U) Acquisition Strategy:

Tactical shelters development will continue to support Initial Deployable Kitchen (IDK) Program.

## (U) FY 1997 (\$ in Thousands):

- (U) \$ 75 Continue research, development and acquisition of the Modular Extendible Ridged Wall Shelter (MERWS)
- (U) \$ 67 Establish capability to evaluate shelter design and performance and perform system integration analysis
- (U) \$ 10 Provide direct feedback and ensure Air Force requirements identified to Joint Committee for Tactical Shelters (JOCOTAS) and ASTM
- (U) \$152 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$ 75 Continue research, development and acquisition of the Modular Extendible Ridged Wall Shelter (MERWS)
- (U) \$102 Establish capability to evaluate shelter design and performance and perform system integration analysis
- (U) \$ 10 Provide direct feedback and ensure Air Force requirements identified to Joint Committee for Tactical Shelters (JOCOTAS) and ASTM
- (U) \$187 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 75 Continue research, development and acquisition of the Modular Extendible Ridged Wall Shelter (MERWS)
- (U) \$102 Establish capability to evaluate shelter design and performance and perform system integration analysis
- (U) \$ 10 Provide direct feedback and ensure Air Force requirements identified to Joint Committee for Tactical Shelters (JOCOTAS) and ASTM
- (U) \$187 Total

Project 2674

Page 12 of 21 Pages

Exhibit R-2 (PE 0604708F)

988

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter	2674	
(U) B. <u>Program Change Summary (\$ in Thousands)</u>			
		FY 1997	FY 1998
(U) Previous President's Budget		181	202
(U) Appropriated Value		152	202
(U) Adjustments to Appropriated Value			
a. Cong/General Reductions			-11
b. SBIR			-4
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming			
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 1999 President's Budget		152	187
			Continuing
			Total Cost
			191
			Continuing
(U) Change Summary Explanation:			
Funding: N/A			
Schedule: N/A			
Technical: N/A			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> N/A			
(U) D. <u>Schedule Profile</u> N/A			



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604708F Civil, Fire, Environmental, Shelter

2674

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) MERWS program	75	75	75
(U) Shelter design, performance and analysis	67	102	102
(U) JOCOTAS program	10	10	10
(U) Total	152	187	187

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	<u>Budget FY 1997</u>	<u>Budget FY 1998</u>	<u>Budget FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Organizations</u>										
MERWS program	Multiple	Multiple				75	75	75	Cont	Cont
Shelter design, performance and analysis	Multiple	Multiple				67	102	102	Cont	Cont
JOCOTAS program	Multiple	Multiple				10	10	10	Cont	Cont
<u>Support and Management Organizations</u>										
N/A						0	0	0	0	0
<u>Test and Evaluation Organizations</u>										
N/A						0	0	0	0	0

Project 2674

Page 14 of 21 Pages

Exhibit R-3 (PE 0604708F)

990

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter			February 1998	2674
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)						
Government Furnished Property: None						
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total		Total Program
				Prior to FY 1997	Budget FY 1997	
Subtotal Product Development				*16,310	152	187
Subtotal Support and Management				0	0	0
Subtotal Test and Evaluation				0	0	0
Total Project				*16,310	152	187
* = Prior year funding could not be broken out in above categories						

Project 2674

Page 15 of 21 Pages

Exhibit R-3 (PE 0604708F)

Project 2674

Page 15 of 21 Pages

Exhibit R-3 (PE 0604708F)

991

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter								3788	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
3788	Environmental Quality	660	0	0	0	0	0	0	0	0	2,739
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>Develops equipment, materials, and processes in support of the Air Force environmental program including pollution prevention, compliance, restoration, and conservation. The focus is on technologies to reduce and eliminate pollutant sources, provide cost effective waste disposal, conduct remediation, and mitigate the effects of wastes and pollutants.</p> <p>(U) <u>Acquisition Strategy:</u></p> <p>Demonstrate, test and validate innovative and promising environmental technologies that eliminate/reduce pollution, comply with environmental regulations and pursue/meet AF goals.</p>											

Project 3788

Page 16 of 21 Pages

Exhibit R-2 (PE 0604708F)

992

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter	3788	
(U) FY 1997 (\$ in Thousands):			
- (U) \$413	Compliance - Green Aerospace Ground Support Equipment (Green AGSE), JP-8 Fuel Emissions characterization, and Open Path Analyzers		
- (U) \$106	Pollution Prevention - Continue developmental roadmap for metal plating/metal finishing		
- (U) \$141	Commercial/lab technology assessment and exploitation		
- (U) \$660	Totals		
(U) FY 1998 (\$ in Thousands):			
- (U) \$0			
- (U) \$0			
- (U) \$0	Total		
(U) FY 1999 (\$ in Thousands):			
- (U) \$0			
- (U) \$0			
- (U) \$0	Total		
(U) FY 2000 (\$ in Thousands):			
- (U) \$0			
- (U) \$0			
- (U) \$0	Total		

Project 3788

Page 17 of 21 Pages

Exhibit R-2 (PE 0604708F)

993

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter	3788	
(U) B. <u>Program Change Summary (\$ in Thousands)</u>			
(U) Previous President's Budget	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	698	0	0
(U) Adjustments to Appropriated Value	698		
a. Cong Reductions	-13		
b. SBIR			
c. Omnibus or Other Above Threshold Reprogram	-25		
d. Below Threshold Reprogramming			
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY1999 President's Budget	660	0	0
			2,739
(U) Change Summary Explanation:			
Funding: ` FY 97 Congressional reductions of \$13K and SBIR of \$25K.			
Schedule: N/A			
Technical: N/A			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>	N/A		
(U) D. <u>Schedule Profile</u>	N/A		

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
5 - Engineering and Manufacturing Development	0604708F Civil, Fire, Environmental, Shelter		3788	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
Compliance	413	0	0	
Pollution Prevention	106	0	0	
Commercial/lab technology assessment and exploitation	141	8	0	
Total	660	0	0	

Project 3788

Page 19 of 21 Pages

Exhibit R-3 (PE 0604708F)

Project 3788

Page 19 of 21 Pages

Exhibit R-3 (PE 0604708F)

995

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604708F Civil, Fire, Environmental, Shelter

3788

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Compliance	Multiple	Multiple			413	0	0	0	0	2,739
Pollution Prevention	Multiple	Multiple			106	0	0	0	0	106
Comm Techn	Multiple	Multiple			141	0	0	0	0	141
<u>Support and Management Organizations</u>										
None					0	0	0	0	0	0
<u>Test and Evaluation Organizations</u>										
None					0	0	0	0	0	0

Project 3788

Page 20 of 21 Pages

Exhibit R-3 (PE 0604708F)

996

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604708F Civil, Fire, Environmental, Shelter								3788	
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)											
Government Furnished Property: None											
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Subtotal Product Development				2,079	660	0	0	0	2,739		
Subtotal Support and Management				0	0	0	0	0	0		
Subtotal Test and Evaluation				0	0	0	0	0	0		
Total Project				2,079	660	0	0	0	2,739		

Project 3788

Page 21 of 21 Pages

Exhibit R-3 (PE 0604708F)

997

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604727F

UNCLASSIFIED

PE TITLE: Joint Standoff Weapon Systems

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																		
BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT																			
5 - Engineering and Manufacturing Development			0604727F Joint Standoff Weapon Systems							1000																			
COST (\$ In Thousands)			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																		
1000	Joint Standoff Weapon Systems		22,039	21,992	15,134	10,495	1,540	0	0	0	196,388																		
	Quantity of RDT&E Articles		19/*	8/*	0	0	0	0	0	0	27/*																		
* Costs of RDT&E articles are not individually priced due to variations in test configurations																													
<p><b>(U) A. Mission Description and Budget Item Justification</b> The Joint Standoff Weapon (JSOW) is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of enemy point defenses. The JSOW launch-and-leave capability will allow several target kills per aircraft sortie. Integration of the JSOW baseline weapon, the AGM-154A (BLU-97 Combined Effects Bomblets), and the JSOW anti-armor weapon, the AGM-154B (BLU-108 submunition), with the threshold F-16C/D Block 50 aircraft is also included. The program provides for development and test of a dispenser design for the JSOW/BLU-108 variant which employs a BLU-108/B submunition payload. Future integration (objective aircraft) is planned with the B-1B, F-16C/D Block 40, and F-15E. B-2 and B-52 integration is currently underway; B-2 is funding its own integration while B-52 integration is being funded by both JSOW and JASSM. The JSOW program also includes the development of Common Munitions BIT (Built-In Test) Reprogramming Equipment (CMBRE) software which is a tester for JSOW, Joint Direct Attack Munition (JDAM), Wind Corrected Munitions Dispenser (WCMD), and future smart weapons. Also included in this program element is funding for the development of the BRU-55, a MIL-STD-1760 dual-carriage ejector rack capable of carrying smart munitions. BRU-55 will allow the F-16C/D to carry four smart weapons including JSOW (a JSOW threshold requirement), 1000 lb JDAM, and WCMD. JSOW is a joint Air Force/Navy program; Navy is the lead service with the Air Force funding development of the JSOW/BLU-108 variant. JSOW is an ACAT ID program. The RDT&amp;E Budget Activity is 5. Engineering and Manufacturing Development. Milestone II was completed 26 April 1995.</p>																													
<p><b>(U) B. Acquisition Strategy</b> JSOW used a competitively selected prime contractor for E&amp;MD. A Cost Plus Incentive Fee (CPIF) contract was awarded for AGM-154A LRIP I. For AGM-154A LRIP II, a Fixed Price Incentive Fee (FPIF) contract was awarded. Both LRIP contracts were conducted in a sole source environment. A sole source AGM-154B LRIP contract will be awarded in FY99.</p>																													
<p>(U) FY 1997 (\$ in Thousands):</p> <table><tr><td>-</td><td>(U) \$ 13,938</td><td>- Planned, designed, and produced Initial Operational Test &amp; Evaluation test vehicles, and associated Systems Engineering Program Management (SEPM); continued development/test Air Force Mission Support System (AFMSS) module</td></tr><tr><td>-</td><td>(U) \$ 153</td><td>- Government Furnished Equipment (GFE) (BLU-108 developmental submunition)</td></tr><tr><td>-</td><td>(U) \$ 2,220</td><td>- Planned and conducted Developmental Test &amp; Evaluation (DT&amp;E)</td></tr><tr><td>-</td><td>(U) \$ 3,099</td><td>- Continued engineering support, program office support, Navy technical support at China Lake, and other government support</td></tr><tr><td>-</td><td>(U) \$ 2,629</td><td>- Continued BRU-55 integration and testing; procured JSOW test assets to support BRU-55 testing</td></tr><tr><td>-</td><td>(U) \$ 22,039</td><td>Total</td></tr></table>												-	(U) \$ 13,938	- Planned, designed, and produced Initial Operational Test & Evaluation test vehicles, and associated Systems Engineering Program Management (SEPM); continued development/test Air Force Mission Support System (AFMSS) module	-	(U) \$ 153	- Government Furnished Equipment (GFE) (BLU-108 developmental submunition)	-	(U) \$ 2,220	- Planned and conducted Developmental Test & Evaluation (DT&E)	-	(U) \$ 3,099	- Continued engineering support, program office support, Navy technical support at China Lake, and other government support	-	(U) \$ 2,629	- Continued BRU-55 integration and testing; procured JSOW test assets to support BRU-55 testing	-	(U) \$ 22,039	Total
-	(U) \$ 13,938	- Planned, designed, and produced Initial Operational Test & Evaluation test vehicles, and associated Systems Engineering Program Management (SEPM); continued development/test Air Force Mission Support System (AFMSS) module																											
-	(U) \$ 153	- Government Furnished Equipment (GFE) (BLU-108 developmental submunition)																											
-	(U) \$ 2,220	- Planned and conducted Developmental Test & Evaluation (DT&E)																											
-	(U) \$ 3,099	- Continued engineering support, program office support, Navy technical support at China Lake, and other government support																											
-	(U) \$ 2,629	- Continued BRU-55 integration and testing; procured JSOW test assets to support BRU-55 testing																											
-	(U) \$ 22,039	Total																											
Project 1000										Page 1 of 6 Pages																			
										Exhibit R-2 (PE 0604727F)																			

999

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		DATE	PROJECT
5 - Engineering and Manufacturing Development		February 1998	1000
PE NUMBER AND TITLE			
0604727F Joint Standoff Weapon Systems			

## (U) FY 1998 (\$ in Thousands):

- (U) \$ 12,315 - Continue JSOW/BLU-108 development and associated SEPM; continue development/test AFMSS module and JSOW CMBRE software  
 - (U) \$ 300 - GFE (BLU-108 developmental submunition)  
 - (U) \$ 858 - Complete JSOW DT&E flight testing  
 - (U) \$ 4,093 - Continue engineering support, program office support, Navy technical support at China Lake, and other government support  
 - (U) \$ 4,426 - Continue BRU-55 development, integration, and flight testing  
 - (U) \$ 21,992 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 9,276 - Complete development and test of B-52 AFMSS module; conduct beddown training; continue integration and planning support for B-1B and F-15E; Conduct design-to-cost initiatives that make JSOW BLU-108 more reliable and allow increased performance  
 - (U) \$ 2,110 - Continue engineering support, program office support, and Navy technical support at China Lake  
 - (U) \$ 3,320 - Complete BRU-55 flight and ground tests; complete BRU-55 EMD; continue F-16 Operational Flight Program (OFP) software development  
 - (U) \$ 428 - F-16 self-targeting/F-16 production OFP verification; F-16/BRU-55 developmental testing  
 - (U) \$ 15,134 Total

Project 1000

Page 2 of 6 Pages

Exhibit R-2 (PE 0604727F)

1000

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT						
5 - Engineering and Manufacturing Development		0604727F Joint Standoff Weapon Systems		1000						
(U) B. <u>Program Change Summary (\$ in Thousands)</u>										
		FY 1997	FY 1998	FY 1999	Total Cost					
(U) Previous President's Budget (FY 1998 PB)		22,463	24,676	23,139	211,300					
(U) Appropriated Value		23,563	24,676							
(U) Adjustments to Appropriated Value										
a. Cong/Gen Reductions		-505	-853							
b. SBIR		-595	-1831							
c. Omnibus or Other Above Threshold Reprogram										
d. Below Threshold Reprogramming		-387	*							
e. Rescissions		-37								
(U) Adjustments to Budget Years Since FY 1998 PB				-8,005						
(U) Current Budget Submit/FY 1999 President's Budget		22,039	21,992	15,134	196,388					
(U) Change Summary Explanation:										
Funding: FY97 BTR transfers excess funds to support research for the development of a miniaturized, near-precision conventional weapon and internal carriage technology. \$4M FY99 funds transferred to PE 0207324F (JSOW procurement) to support FY99 BRU-55 production start. \$3.7M FY99 funds transferred for other higher priorities. \$305K FY99 funds taken as an inflation adjustment.										
* An additional \$524K is pending reprogramming in FY98 to fund other higher priorities.										
Schedule: Delays BLU-108 P3I integration.										
Technical: None										
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>										
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total
(U) Appropriation: Missile Procurement (3020), Air Force, Program Title: JSOW, PE 0207324F		0	18,528	41,724	89,431	115,095	123,859	169,153	1,159,567	1,736,873
BA-02, BP-20, P-1 Line 4										
(U) SEEK EAGLE (PE 0207590F)		7,986	1,112	10,418	0	0	0	0	0	19,516
Project 1000										
Page 3 of 6 Pages										
Exhibit R-2 (PE 0604727F)										

1001

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY					DATE				
5 - Engineering and Manufacturing Development					February 1998				
					PROJECT				
					1000				
					0604727F Joint Standoff Weapon Systems				
					PE NUMBER AND TITLE				

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		1000
5 - Engineering and Manufacturing Development		0604727F Joint Standoff Weapon Systems		
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U)	Major Contracts	13,938	12,315	9,276
(U)	Support Contracts	2,542	3,403	1,690
(U)	Program Office Support/Other government support	557	690	420
(U)	Test and Evaluation	2,220	858	428
(U)	Government Furnished Equipment (GFE)	153	300	0
(U)	BRU-55	2,629	4,426	3,320
	TOTAL	22,039	21,992	15,134

Project 1000

Page 5 of 6 Pages

Exhibit R-3 (PE 0604727F)

Project 1000

Page 5 of 6 Pages

Exhibit R-3 (PE 0604727F)

1003

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE								0604727F Joint Standoff Weapon Systems	1000	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)												
Performing Organizations:												
Contractor or Government	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Product Development Organizations												
Raytheon System Company (RSC)	SS/CPIF	Jun 95	136,039	136,039	92,094	13,938	12,315	9,276	8,416	136,039		
Lockheed M Tech	FP/CPIF	Feb 95	18,020	18,020	8,900	800	3,000	3,320	2,000	18,020		
	FP/CPIF	Oct 95	8,720	8,720	5,465	1,829	1,426	0	0	8,720		
Support and Management Organizations												
China Lake NWC	MIPR	Apr 97	N/A	N/A	2,790	758	800	500	100	4,948		
ASC/YH & Other			N/A	N/A	8,771	2,341	3,293	1,610	1,519	17,534		
Test and Evaluation Organizations												
AFDTC, Eglin AFB	PO	Apr 97	N/A	N/A	3,341	2,220	858	428	0	6,847		
Government Furnished Property:												
Product Development Organizations												
Textron	FPIF	Mar 96	4,280	4,280	3,827	153	300	0	0	4,280		
Support and Management Organizations												
None												
Test and Evaluation Organizations												
None												
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total Project												
110,286 16,720 17,041 12,596 10,416 167,059												
11,561 3,099 4,093 2,110 1,619 22,482												
3,341 2,220 858 428 0 6,847												
125,188 22,039 21,992 15,134 12,035 196,388												
Project 1000												
Exhibit R-3 (PE 0604727F)												

Project 1000

Page 6 of 6 Pages

Exhibit R-3 (PE 0604727F)

1004

UNCLASSIFIED

PE NUMBER: 0604735F

UNCLASSIFIED

PE TITLE: Combat Training Ranges

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604735F Combat Training Ranges								2286	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2286	Combat Training Range Equipment	26,490	19,131	14,581	12,984	14,011	14,706	14,982	Continuing	Continuing	
	Quantity of RDT&E Articles	4*	0	0	0	0	0	0	0	4	

Note: \* AMODSM - Quantity of RDT&E Articles: 4 Not Separately Priced (NSP)

(U) **A. Mission Description and Budget Item Justification**

This program develops the electronic, telecommunications, and instrumentation equipment/systems for training ranges worldwide. These systems provide real-time monitoring and control of aircrew air-to-air, air-to-ground, and electronic warfare training along with the ability to record events for crew debriefing and analysis. The primary developmental effort is the Nellis Air Combat Training System (NACTS) at Nellis AFB. NACTS is a Global Positioning System (GPS) based system to replace the current Red Flag Measurement and Debriefing System (REMDS) increasing to 100 the number of instrumented participants, improving aircraft position tracking accuracy, expanding range coverage, multiplying weapons simulations and adding electronic warfare threat/aircrew interaction. The development effort involves software development to increase the number of high activity players as well as the integration and test of the training system comprised of ground equipment and aircraft pods purchased by procurement funding. This program element also funds the continued development of advanced electronic threats, aircraft/pod interfaces, software interoperability among service ranges and the encryption of range/aircraft data links. This program develops the Advanced Message Oriented Data Security Module (AMODSM) communications security equipment. This program is in budget activity 5 - Engineering and Manufacturing Development because the Combat Training Ranges (CTR) Program directly contributes to the effectiveness and survivability of US combat forces by developing range instrumentation and training systems to increase the effectiveness of the training spectrum from individual aircrew skill training to large-scale exercises.

(U) **Acquisition Strategy:**

. The acquisition strategy is competitive, with cost plus contracts

(U) **FY 1997 (\$ in Thousands):**

- (U)	\$4,031	Continued Combat Training Ranges (CTR) basic operating support, and system acquisition and engineering support for range and threat systems
- (U)	\$9,208	Continued Engineering and Development (EMD) of NACTS
-	-	Finalized NACTS software design (NSP)
-	-	Initiated system integration and factory testing (NSP)
-	-	Completed prototype flight testing (NSP)
-	-	Initiate weapons simulation integration efforts (NSP)
- (U)	\$707	Began interoperability improvements with the Navy to include software upgrades and weapons simulations
- (U)	\$372	Began advanced threat development effort

Project 2286

Page 1 of 8 Pages

Exhibit R-2 (PE 0604735F)

1005

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2286

## 5 - Engineering and Manufacturing Development

## 0604735F Combat Training Ranges

- (U) \$1,521 Continued AMODSM development with the Navy.

- (U) \$808 Continued development and support of interface between ACTS (Air Combat Training System) programs and Air Force platforms

- -- Established interface agreements for F-16A/B, F-16 Block 30, A-10, and B-52 (NSP)

- -- Continued Interface Control Working Group activities (NSP)

- -- Established Interface Memorandum of Agreement (MOA) with OO-ALC for F-16 Block 30, and F-16A/B (NSP)

- -- Established MOA with SM-ALC for A-10 (NSP)

- -- Established MOA with OC-ALC for B-52 (NSP)

- -- Exercised interface contract option with Lockheed Martin and McDonnell Douglas (NSP)

- -- Conducted Combined Interface Control Working Group and Technical Interchange meetings (NSP)

- (U) \$2,179 Continued ASSET (ACTS Software Support Evaluation and Test) efforts to perform Air Combat Training Systems software baseline sustainment support for the airborne instrumentation systems for all Air Force configurations and Advanced Display Debriefing System (ADDS) for the joint services.

- (U) \$2,500 Began efforts to ensure interoperability between the Navy's Joint Tactical Combat Training System (JTCTS) and Air Force unique requirements JTCTS Contractor: Raytheon, NJ (Navy Contract)

- (U) \$5,164 Began EMD development of Alpena pod and ground system.

- (U) \$26,490 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$3,751 Continue CTR basic operating support, and system acquisition and engineering support for range and threat systems

- (U) \$4,705 Complete NACTS EMD

- -- Complete and test final implementation of secure data link (NSP)

- -- Complete system site installation, integration and testing (NSP)

- -- Complete implementation of weapons simulation (NSP)

- -- Achieve Initial Operational Capability (IOC) (unencrypted) April 98 ( preliminary date, final IOC date to be negotiated) (NSP)

- (U) \$1,995 Continue interoperability improvements with existing Navy ranges to include software upgrades and weapons simulation development

- (U) \$941 Continue development of aircraft interfaces with aircraft/Pod integration for range applications with aircraft program offices and aircraft manufactures

- (U) \$5,175 Continue advanced threat system development effort

- (U) \$1,623 Continue ASSET efforts

- (U) \$941 Complete Alpena EMD

- (U) \$19,131 Total

## (U) FY 1999 (\$ in Thousands):

Project 2286

Page 2 of 8 Pages

Exhibit R-2 (PE 0604735F)

1006

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

**5 - Engineering and Manufacturing Development****0604735F Combat Training Ranges****2286**

- (U)	\$3,061	Continue CTR basic operating support, and system acquisition and engineering support for range and threat systems
- (U)	\$3,080	Continue interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development
- (U)	\$1,080	Continue development of aircraft interfaces with aircraft/Pod integration for range applications with aircraft program offices
- (U)	\$4,880	Continue advanced threat system development effort
- (U)	\$1,880	Continue ASSET efforts
- (U)	\$600	Begin development of software for proof of concept prototype demo of AN/MSR-T4 Enhanced Electronic Countermeasures (ECM) Environment Analysis Capability (TURBO TRAINS)
- (U)	\$14,581	Total

**(U) B. Program Change Summary (\$ in Thousands)**

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (1998 PB)	21,926	20,331	14,875	
(U) Appropriated Value	23,018	20,331		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-517	-690		
b. SBIR	-575	-510		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	+4,600			
e. Rescissions	-36			
(U) Adjustments to Budget Years Since FY 1998 PB			-294	
(U) Current Budget Submit/ FY 1999 President's Budget	26,490	19,131	14,581	TBD

**(U) Change Summary Explanation:**

Funding: Increase in FY97 was to support Alpena EMD

Decrease in FY97 was due to the rescission to fund Bosnia supplemental

Decrease in FY99 is inflation adjustment

Schedule: None

Technical: None

**(U) C. Other Program Funding Summary (\$ in Thousands)**

Project 2286

Page 3 of 8 Pages

Exhibit R-2 (PE 0604735F)

1007

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE	February 1998	PROJECT
5 - Engineering and Manufacturing Development		0604735F Combat Training Ranges												2286
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost				
(U) PE27429F: Appropriation: Other Procurement, AF (OPAF) Budget Activity: OPAF/Electronics & Telecommunications Equipment, Program Title: Combat Training Ranges		12,252	15,713	15,017	19,029	33,502	31,190	30,443	Cont	TBD				
(U) PE27429F: Appropriation: Aircraft Procurement, AF (APAF) Budget Activity: APAF/Other Procurement Charges, Program Title: Combat Training Ranges		16,512	9,771	3,955	18,395	20,094	20,465	20,909	Cont	TBD				
(U) D. Schedule Profile														
(U) Nellis Air Combat Training System (NACTS)	1													
(U) Final Design Review														
(U) Complete System Integration and Factory Test														
(U) Complete Site Installation														
(U) Site Acceptance Testing														
(U) System Turnover Activity														
(U) IOC														
(U) Advances Threats Development	*													
(U) Initiate New Acquisition														
(U) Contract Award														
(U) Joint Service Range Software Interoperability	*													
(U) New Block Upgrade (Ongoing)	*													

Project 2286

Page 4 of 8 Pages

Exhibit R-2 (PE 0604735F)

1008

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
5 - Engineering and Manufacturing Development		0604735F Combat Training Ranges						February 1998	2286
		FY 1997		FY 1998		FY 1999			
		1	2	3	4	1	2	3	4
(U) New Block Upgrade Installation and Checkout (Ongoing)			*	*	*		X		
(U) Advanced Message Oriented Data Security Module (AMODSM)									
(U) Deliver Engineering Development Models (EMDs) (2 - Prototypes)									
(U) Exercise Production Options						X			
(U) Deliver Production Units									X
(U) Aircraft/Pod Interface Development									
(U) F-16 Block 40 & 50 Interface Contract		*	*	*	*		X		
(U) F-15 Interface Contract		*	*	*	*		X		
(U) Initiate Combined Interface Control Working Group		*	*	*	*		X		
(U) Establish Interface MOA w/OO-ALC		*	*	*	*		X		
(U) Establish Interface MOA w/SM-ALC			*	*	*		X		
(U) Establish Interface MOA w/OC-ALC			*	*	*		X		
(U) ASSET Facility									
(U) Contract Award/Option									*
(U) New Contract Award									X

Project 2286

Page 5 of 8 Pages

Exhibit R-2 (PE 0604735F)

1009

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2286

## 5 - Engineering and Manufacturing Development

## 0604735F Combat Training Ranges

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Nellis Air Combat Training System (NACTS)	9,208	4,705	0
(U) Advanced Message Oriented Data Security Module (AMODSM)	1,521	0	0
(U) Aircraft Interface Development	808	941	1,080
(U) Advanced Threat Development	372	5,175	4,880
(U) Joint Service Interoperability Improvements	707	1,995	3,080
(U) ASSET Efforts	2,179	1,623	1,880
(U) JTCTS Interoperability Efforts	2,500	0	0
(U) Enhanced ECM Environment Analysis Capability	0	0	600
(U) Combat Training Ranges Program Office Support	4,031	3,751	3,061
(U) Alpena	5,164	941	0
(U) Total	26,490	19,131	14,581

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Cubic Defense (NACTS)	C/CPAF/FFP	Mar 95			17,586	8,870	4,705	0	0	31,161
Raytheon (JTCTS)	Navy Contr	Mar 95			0	2,500	0	0	0	2,500
Lockheed Martin (AMODSM)	Navy Contr	FY 95			2,566	1,095	0	0	0	3,661

Project 2286

Page 6 of 8 Pages

Exhibit R-3 (PE 0604735F)

1010

UNCLASSIFIED

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											2286
5 - Engineering and Manufacturing Development										PE NUMBER AND TITLE	
										0604735F Combat Training Ranges	
Contractor or Government	Contract Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office	Total Prior FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
Activity	Vehicle	Sep 96	EAC	EAC	350	182	700	1,000	Cont	TBD	
ASI (ASSET)	S/CPAF	Jan 98			0	0	5,175	5,000	Cont	TBD	
Advanced Threats (Contractor TBD)	Unknown										
Joint	Navy	Mar 97			0	618	650	1,200	Cont	TBD	
Interoperability	Contract										
Aircraft Interface	Through MOAs with ALCs & Aircraft SPO Contractors	Jun 96			412	272	456	1,200	Cont	TBD	
Alpena (Contractor TBD)	FPIF	Feb 98			0	4,764	800	0	Cont	TBD	
Support and Management Organizations											
ASC/WMR, Eglin AFB, FL	Various				4,887	5,914	5,475	5,011	Cont	TBD	
NAWC, China Lake, CA	Various				0	1,935	870	870	Cont	TBD	
Test and Evaluation Organizations											
ASC/WMR, Eglin AFB, FL	Various				1,405	100	100	100	Cont	TBD	
46 Test Wing, Eglin AFB, FL	Various				640	240	200	200	Cont	TBD	
Total Project					27,841	26,490	19,131	14,581	Cont	TBD	

Project 2286

Page 7 of 8 Pages

Exhibit R-3 (PE 0604735F)

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
5 - Engineering and Manufacturing Development	0604735F Combat Training Ranges			2286
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>				
Government Furnished Property: NA				
Subtotal Product Development	20,914	18,301	12,486	8,400
Subtotal Support and Management	4,887	7,849	6,345	5,881
Subtotal Test and Evaluation	2,040	340	300	300
Total Project	27,841	26,490	19,131	14,581
			Cont	TBD
			Cont	TBD
			Cont	TBD
			Cont	TBD

Project 2286

Page 8 of 8 Pages

Exhibit R-3 (PE 0604735F)

Project 2286

Page 8 of 8 Pages

Exhibit R-3 (PE 0604735F)

1012

UNCLASSIFIED

PE NUMBER: 0604740F

UNCLASSIFIED

PE TITLE: Computer Resources Management Technology

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604740F Computer Resources Management Technology									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	1,805	4,157	200	0	0	0	0	0	19,746	
2522	Advanced Computer Technology Transition	1,226	676	0	0	0	0	0	0	5,607	
2523	Architectural Implementation	579	684	200	0	0	0	0	0	3,443	
2524	Reuse and Component Support	0	2,797	0	0	0	0	0	0	10,696	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**

A major restructuring of this program into an Air Force Product Lines (AFPL) program is currently in process. As part of this, Project 2522 will be merged and funding will transition to Project 2523, to be renamed Product Line Implementation, during the FY 2000 Program Objective Memorandum (POM). The AFPL program dramatically reduces the development time, costs, and risks associated with the acquisition and development of warfighting command and control (C2) systems by using families of pre-defined product lines. The use of product line designs during program development improves the quality of computer systems and reduces overall life cycle costs. These improvements are implemented through Project 2523, the Command and Control Product Lines (CCPL) program and Project 2524, the Comprehensive Approach to Reusable Defense Software (CARDS) program. CCPL minimizes development cost and time by using pre-defined product line architectures with tested, reusable software components from mature programs. CARDS identifies, tests, and provides reusable software components and products to the CCPL program. CARDS developed a software reuse strategy for the DoD; and is developing a Product Line Asset Center Software Reuse Repository to manage a command center product line based on primarily commercial off-the-shelf (COTS) products. This initiative has determined that over 80% of the functionality of any command center software is common to all command centers. For seven programs using product line concepts, average savings of 56% in development costs and 66% in development time can be realized. CCPL transitions the R&D concept to the operational world and provides additional product lines. This program is in budget activity 5 - Engineering and Manufacturing Development, due to the developmental nature of the effort.

**(U) Acquisition Strategy:**

All major contracts within this Program Element were awarded after full and open competition, with the exception of STI, which was awarded under a sole source procurement.

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604740F Computer Resources Management  
Technology(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	1,862	1,459	1,485	21,333
(U) Appropriated Value	1,956	4,459		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-5	-146		
b. SBIR	-48	-156		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming	-54			
e. Rescissions	-44			
(U) Adjustments to Budget Years Since FY 1998 PB			-1,285	
(U) Current Budget Submit/FY 1999 President's Budget	1,805	4,157	200	19,746

## (U) Change Summary Explanation:

**Funding:** Congress added \$3.0 million to the FY 98 budget for the Comprehensive Approach to Reusable Defense Software (CARDS) program (project 2524). As a result of higher Air Force priorities, FY 99 and outyear funding was reduced/eliminated. As a result, The Computer Resources Management Technology program is being restructured to support development of an Air Force Product Lines (AFPL) program as part of the FY 2000 POM effort.

**Schedule:** See above.

**Technical:** See above.

(U) C. Other Program Funding Summary (\$ in Thousands)  
Not applicable.(U) D. Schedule Profile:  
See individual projects.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604740F Computer Resources Management  
Technology

PROJECT

2522

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2522	Advanced Computer Technology Transition	1,226	676	0	0	0	0	0	0	5,607

**(U) A. Mission Description and Budget Item Justification**

This project conducts research to improve support of embedded computer system software. It encompasses automation and standardization of support processes, advanced support methodologies, tools and environments, and readiness support to facilitate rapid turnaround of software in response to changing mission and/or changing threat requirements. As part of a major restructuring of this program, this project will be terminated after FY 98. This program is in budget activity 5 - Engineering and Manufacturing Development, due to the developmental nature of the effort.

**(U) Acquisition Strategy:**

All major contracts within this Program Element were awarded after full and open competition.

**(U) FY 1997 (\$ in Thousands):**

- (U)	\$361	Continued development of technology transition infrastructure within the Air Force
- (U)	\$114	Continued funding of Joint Logistics Commanders activities in software re-engineering and modernization of obsolescent, expensive software.
- (U)	\$751	Improved and continued to implement Air Force-wide metrics repository.
- (U)	\$1,226	Total

**(U) FY 1998 (\$ in Thousands):**

- (U)	\$676	Funding will be merged with Project 2523 as part of the restructuring of this program (see page 1) to develop architecture for CCPL.
- (U)	\$676	Total

**(U) FY 1999 (\$ in Thousands):**

Project 2522 transitioned to Project 2523 in FY 98.

Project 2522

Page 3 of 15 Pages

Exhibit R-2 (PE 0604740F)

1015

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604740F Computer Resources Management

PROJECT

2522

Technology

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	1,228	725	698	6,354
(U) Appropriated Value	1,228	725		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions		-24		
b. SBIR		-25		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming	-2			
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-698	
(U) Current Budget Submit/FY 1999 President's Budget	1,226	676	0	5,607

## (U) Change Summary Explanation:

Funding: Program is being merged with Project 2523 as part of the Command and Control Product Lines (see page 1).

Schedule: See above.

Technical: See above.

(U) C. Other Program Funding Summary (\$ in Thousands):

Not applicable.

(U) D. Schedule Profile

Not applicable.

Project 2522

Page 4 of 15 Pages

Exhibit R-2 (PE 0604740F)

1016

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604740F Computer Resources Management Technology	2522	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>			
		<u>FY 1997</u>	<u>FY 1998</u>
(U) Technology Transition Infrastructure Development		361	
(U) Joint Logistics Commanders Activities		114	
(U) Metrics Repository Implementation		751	
(U) Command and Control Product Lines (CCPL)			676
(U) Total		1,226	676

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2522

5 - Engineering and Manufacturing Development

0604740F Computer Resources Management

Technology

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
Universal SCA	CP	Dec 94	N/A	N/A	75	0	0	0	0	0	75
AGCS	CP	Jan 95	N/A	N/A	50	0	0	0	0	0	50
Martin Marietta	FFP	22 Oct 94	N/A	N/A	213	0	0	0	0	0	213
Hughes Aircraft	CPFF	19 Dec 92	N/A	N/A	282	287	220	0	0	0	789
Raytheon Co.	CPFF	19 Dec 92	N/A	N/A	891	361	200	0	0	0	1,452
Unisys	CPFF	29 Sep 93	N/A	N/A	660	0	0	0	0	0	660
TRW	CPFF	20 Feb 97	N/A	N/A	0	22	256	0	0	0	278
Lockheed Martin	CP	Var	N/A	N/A	0	100	0	0	0	0	100
<u>Support and Management Organizations</u>											
OO-ALC	N/A	Var	N/A	N/A	157	0	0	0	0	0	157
SENCOM	N/A	Jan 95	N/A	N/A	25	0	0	0	0	0	25
MOSAIC (TEMS)	CP	Jan 95	N/A	N/A	415	0	0	0	0	0	415
JLC	N/A	Var	N/A	N/A	230	0	0	0	0	0	230
SEI	FFRDC	Var	N/A	N/A	185	0	0	0	0	0	185
Sterling	N/A	Var	N/A	N/A	0	100	0	0	0	0	100
ATTI	N/A	Var	N/A	N/A	0	73	0	0	0	0	73
ESC	N/A	N/A	N/A	N/A	522	283	0	0	0	0	805

Project 2522

Page 6 of 15 Pages

Exhibit R-3 (PE 0604740F)

1018

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT	2522
BUDGET ACTIVITY					PE NUMBER AND TITLE								
5 - Engineering and Manufacturing Development					0604740F Computer Resources Management								
					Technology								
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program		
<u>Test and Evaluation Organizations</u>													
Not applicable.													
Subtotal Product Development													
Subtotal Support and Management													
Subtotal Test and Evaluation													
Total Project													
					2,171	770	676	0	0	0	3,617		
					1,534	456	0	0	0	0	1,990		
					0	0	0	0	0	0	0		
					3,705	1,226	676	0	0	0	5,607		

Project 2522

Page 7 of 15 Pages

Exhibit R-3 (PE 0604740F)

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604740F Computer Resources Management  
Technology

PROJECT

2523

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2523 Architectural Implementation	579	684	200	0	0	0	0	0	3,443

**(U) A. Mission Description and Budget Item Justification**

As part of the restructuring of this program (see page 1), this project is being renamed Command and Control Product Lines (CCPL). The CCPL program provides pre-defined product line architectures with tested, reusable software components to build Command and Control (C2) systems. Using rapid prototyping techniques, a CCPL contractor can quickly tailor a product line to the warfighter's needs and deliver an integrated, combat-ready system. All product lines and components are based on Defense Information Infrastructure Common Operating Environment (DII COE) principles; make maximum use of open system architectures, industry standards, Commercial Off-the-Shelf (COTS) products, and government furnished equipment; and incorporate multilevel security (MLS) features. CCPL minimizes development risks by reusing proven software components from mature programs and by continuously testing new products and technologies against the product line designs to ensure integration and interoperability. The CCPL contractors develop and maintain the C2 product line infrastructure in a collaborative, synergistic environment using validated, mature software engineering processes to help ensure the quality of the designs and components. Proven product line designs and tested software components reduce development costs, risks, and time for the user. New technologies, capabilities, and incremental developments are assessed and integrated into the designs as part of the product line development process to minimize any impact to the user. This program is in budget activity 5 - Engineering and Manufacturing Development, due to the developmental nature of the effort.

**(U) Acquisition Strategy:**

All major contracts within this Program Element were awarded after full and open competition.

**(U) FY 1997 (\$ in Thousands):**

- (U)	\$229	Developed architecture for Command and Control Product Line (CCPL)
- (U)	\$200	Qualified components for CCPL.
- (U)	\$150	Integrate products into CCPL
(U)	\$579	Total

**(U) FY 1998 (\$ in Thousands):**

- (U)	\$340	Qualify components for CCPL.
- (U)	\$344	Integrate products into CCPL
- (U)	\$684	Total

Project 2523

Page 8 of 15 Pages

Exhibit R-2 (PE 0604740F)

1020

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604740F Computer Resources Management Technology	2523	

[illegible]



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604740F Computer Resources Management

2523

Technology

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Command and Control Product Line Architectural (CCPL) Development	229		
(U) CCPL Component Qualification	200	340	200
(U) CCPL Product Integration	150	344	
(U) Total	579	684	200

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

Product Development Organizations

Hughes	CPFF	19 Dec 92	N/A	N/A	453	300	458	67	0	1,278
Raytheon	CPFF	19 Dec 92	N/A	N/A	1,000	100	0	66	0	1,166
AGCS	CPFF	Dec 94	N/A	N/A	50	0	0	0	0	50
TRW	CPFF	12 Feb 97	N/A	N/A	0	100	190	67	0	357
Unisys	CPFF	29 Sep 93	N/A	N/A	30	0	0	0	0	30

Support and Management Organizations

MOSAIC (TEMS)	N/A	Var	N/A	N/A	178	0	0	0	0	178
ATTI	N/A	Var	N/A	N/A	22	0	0	0	0	22
ESC	N/A	N/A	N/A	N/A	247	79	36	0	0	362

Test and Evaluation Organizations

Not applicable.

Project 2523

Page 10 of 15 Pages

Exhibit R-3 (PE 0604740F)

1022

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			2523	
5 - Engineering and Manufacturing Development	0604740F Computer Resources Management				
	Technology				
Government Furnished Property:					
Not applicable.					
Subtotal Product Development	1,533	500	648	200	0 2,881
Subtotal Support and Management	447	79	36	0	0 562
Subtotal Test and Evaluation					
Total Project	1,980	579	684	200	0 3,443

Project 2523

Page 11 of 15 Pages

Exhibit R-3 (PE 0604740F)

Project 2523

Page 11 of 15 Pages

Exhibit R-3 (PE 0604740F)

1023

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604740F Computer Resources Management  
Technology

PROJECT

2524

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2524 Reuse and Component Support	0	2,797	0	0	0	0	0	0	10,696

**(U) A. Mission Description and Budget Item Justification**

This project will be renamed the Central Archive for Reusable Defense Software (CARDS) program. CARDS develops a reuse blueprint for DoD and establishes a reuse library. CARDS is a Congressional special interest item for which Congress added funds in FY 1998. CARDS identifies, tests, and provides reusable software components and products to the CCPL program. CARDS developed a software reuse strategy for the DoD; and is developing a Product Line Asset Center Software Reuse Repository to manage a command center product line based on primarily on commercial off-the-shelf (COTS) products. This program is in budget activity 5 - Engineering and Manufacturing Development, due to the developmental nature of the effort.

**(U) Acquisition Strategy:**

All major contracts within this Program Element were awarded after full and open competition.

**(U) FY 1997**

Not applicable.

**(U) FY 1998**

- (U) \$440 Identify Enterprise Wide Assets (From COTS, GOTS, Product line engineering centers)  
 - (U) \$2060 Perform suitability testing against product line architectures, assets, criteria and design  
 - (U) \$297 Maintain repository/distribute product line architecture, assets, criteria and design  
 - (U) \$2,797 Total

**(U) FY 1999**

- (U) \$0 Total

Project 2524

Page 12 of 15 Pages

Exhibit R-2 (PE 0604740F)

1024

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604740F Computer Resources Management  
Technology

2524

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	0	0	0	10,899
(U) Appropriated Value	0	3,000		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions		-98		
b. SBIR		-105		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY 1999 President's Budget	0	2,797	0	10,696

## (U) Change Summary Explanation:

Funding: Congress added \$3.0 million to the FY 98 budget for the Comprehensive Approach to Reusable Defense Software (CARDS) program.

Schedule: See above.

Technical: See above.

(U) C. Other Program Funding Summary (\$ in Thousands)

Not applicable.

(U) D. Schedule Profile

Not applicable.

Project 2524

Page 13 of 15 Pages

Exhibit R-2 (PE 0604740F)

1025

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604740F Computer Resources Management

2524

Technology

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) Identify Enterprise Wide Assets		440		
(U) Perform Suitability Testing		2,060		
(U) Maintain Repository/Distribute Product Line		297		
(U) Total		2,797		

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
<u>Product Development Organizations</u>											
Lockheed Martin	CPFF	May 97	N/A	N/A	0	0	330	0	0	0	330
<u>Support and Management Organizations</u>											
Unisys	CPFF	29 Sep 93	N/A	N/A	5,638	0	0	0	0	0	5,638
AGCS	CR	Dec 94	N/A	N/A	270	0	0	0	0	0	270
WVA High Tech	NPLACE	18 Nov 96	N/A	N/A	1,700	0	2,060	0	0	0	3,760
Raytheon/Hughes	CPFF	19 Dec 92	N/A	N/A	38	0	407	0	0	0	445
ATTI	N/A	N/A	N/A	N/A	253	0	0	0	0	0	253

Test and Evaluation Organizations

Not applicable.

Project 2524

Page 14 of 15 Pages

Exhibit R-3 (PE 0604740F)

1026

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604740F Computer Resources Management Technology		2524		

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget FY 2000	Budget to Complete	Total Program
Subtotal Product Development				0	0	330	0	0	0	330
Subtotal Support and Management				7,899	0	2,467	0	0	0	10,366
Subtotal Test and Evaluation				0	0	0	0	0	0	0
Total Project				7,899	0	2,797	0	0	0	10,696

Project 2524

Page 15 of 15 Pages

Exhibit R-3 (PE 0604740F)

Project 2524

Page 15 of 15 Pages

Exhibit R-3 (PE 0604740F)

1027

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604750F

UNCLASSIFIED

PE TITLE: Intelligence Equipment

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE							PROJECT		
5 - Engineering and Manufacturing Development		0604750F Intelligence Equipment							2053		
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2053	National Air Intel Center	1,013	1,223	1,300	1,369	1,336	1,353	1,379	Cont	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
(U) A. Mission Description and Budget Item Justification											

**(U) A. Mission Description and Budget Item Justification**

Intelligence Equipment (IE) provides continuing development and upgrades of threat analysis capabilities of the National Air Intelligence Center (NAIC) and Air Force Information Warfare Center (AFIWC). Both organizations are tasked with providing detailed foreign technology intelligence information to a variety of both DOD and non-DOD customers. In the past few years, customers' requirements have been more sophisticated, dictating more detailed and timely intelligence not only in the technology regime but also in the economic, world crisis, and political arenas. IE provides NAIC and AFIWC with the tools necessary to produce timely intelligence of foreign weapon systems and develops the tools to model and assess foreign airborne and aerospace systems. This is the only AF program developing new, or upgraded analysis, modeling and simulation tools focused on intelligence production in support of AF developmental and operational functions. This effort is Budget Activity 5, Engineering & Manufacturing Development, because the program develops and inserts new technology into existing systems and models to keep existing systems current.

**(U) Acquisition Strategy:**

All major contracts within this Program Element were awarded after full and open competition.

**(U) FY 1997 (\$ in Thousands):**

-	(U) \$ 180	Continued Model Synthesis Interface.
-	(U) \$ 215	Completed Low Observables Design Synthesis Tools (LODST) Upgrades for UAV
-	(U) \$ 180	Initiated Advanced Communication Network Modeling
-	(U) \$ 164	Initiated RF Weapons Modeling
-	(U) \$ 274	Initiated Advanced Infrared Countermeasures Assessment
-	(U) \$1,013	Total

Project 2053

Page 1 of 6 Pages

Exhibit R-2 (PE 0604750F)

1029

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2053

## 5 - Engineering and Manufacturing Development

## 0604750F Intelligence Equipment

## (U) FY 1998 (\$ in Thousands):

- (U) \$ 180 Complete Model Synthesis Interface.  
 - (U) \$ 421 Continue Advanced Communication Network Modeling  
 - (U) \$ 351 Continue RF Weapons Modeling  
 - (U) \$ 271 Complete Advanced Infrared Countermeasures Assessment  
 - (U) \$1,223 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 425 Complete Advanced Communication Network Modeling  
 - (U) \$ 244 Complete RF Weapons Modeling  
 - (U) \$ 316 Initiate Foreign C3I Simulation (FoCIS)  
 - (U) \$ 315 Initiate Electromagnetic Counter Measures Modeling  
 - (U) \$1,300 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998)	1,167	1,287	1,326	
(U) Appropriated Value	1,211	1,287		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	(25)	(42)		
b. Small Business Innovative Research (SBIR)	(19)	(22)		
c. Below Threshold Reprogramming (BTR)				
d. Rescissions	(154)			
(U) Adjustment to Budget Years Since FY 1998 PB			(26)	
(U) Current Budget Submit/FY 1999 President's Budget	1,013	1,223	1,300	TBD

## (U) Change Summary Explanation:

Funding: None.  
 Schedule: None  
 Technical: None.

Project 2053

Page 2 of 6 Pages

Exhibit R-2 (PE 0604750F)

1030

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
5 - Engineering and Manufacturing Development		2053	
PE NUMBER AND TITLE		0604750F Intelligence Equipment	
(U) C. Other Program Funding Summary (\$ in Thousands)			
(U) None.			
(U) RELATED ACTIVITIES—None.			
(U) D. <u>Schedule Profile</u>			
		FY 1997	FY 1998
		1 2 3	1 2 3 4
(U) Model Synthesis Interface			
(U) Air Surveillance C3 - web based simulation		X	
(U) Low Observables Design Synthesis Tools Upgrades for UAVs			
(U) Advanced Communication Network Modeling			X
(U) Radio Frequency Weapons Modeling			X
(U) Advanced Infrared Countermeasures Assessment			
(U) Foreign C3I Simulation (FoCIS)			X
(U) Electromagnetic Counter Measures Modeling			X
(U) Advanced IRCM Systems Assessment Model (AIRSAM)			
(U) Electromagnetic Antenna Modeling			

Project 2053

Page 3 of 6 Pages

Exhibit R-2 (PE 0604750F)

1031

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		0604750F Intelligence Equipment		
5 - Engineering and Manufacturing Development					
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>	FY 1997	FY 1998	FY 1999		
(U) Model Synthesis Interface	180	180			
(U) Low Observables Design Synthesis Tools Upgrades for UAVs	215				
(U) Advanced Communication Network Modeling	180	421	425		
(U) Radio Frequency Weapons Modeling	164	351	244		
(U) Advanced Infrared Countermeasures Assessment	274	271			
(U) Foreign C3I Simulation (FoCIS)			316		
(U) Electromagnetic Counter Measures Modeling			315		
(U) Advanced IRCM Systems Assessment Model (AIRSAM)					
(U) Electromagnetic Antenna Modeling					
(U) <b>Total</b>	1,013	1,223	1,300		

Project 2053

Page 4 of 6 Pages

Exhibit R-3 (PE 0604750F)

1032

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE								2053		
5 - Engineering and Manufacturing Development		0604750F Intelligence Equipment										
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)												
Performing Organizations:												
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Product Development Organizations												
GRCI	CPFF	30 Sep 93			563	120	120	0	0	803		
93-C-0261/0												
McDonnell Douglas F33657-94-D-2277		8 May 97			304	225	0	0	Cont.	TBD		
GRCI	CPFF	31 May 97			7	139	379	0	0	575		
93-C-0261/25												
Harris Corp	CPFF	15 May 97				225	220	0	Cont.	TBD		
94-D-0055/10												
Applied Science Lab 97-C-0036	CPFF	16 Jul 97				100	300	221	Cont.	TBD		
Contractor TBD												
Rome Laboratory						204	204	887	Cont.	TBD		
								192	Cont.	TBD		
Support and Management Organizations - N/A												
Test and Evaluation Organizations - N/A												
Project 2053												
Page 5 of 6 Pages												
Exhibit R-3 (PE 0604750F)												

Project 2053

Page 5 of 6 Pages

Exhibit R-3 (PE 0604750F)

1033

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE				
5 - Engineering and Manufacturing Development		0604750F Intelligence Equipment			February 1998	2053
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>						
Government Furnished Property:						
	Contract	Award or	Delivery	Total		
Item	Method/Type	Obligation	Date	Prior to	Budget	Budget to
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>		<u>FY 1997</u>	<u>FY 1997</u>	<u>Complete</u>
					<u>FY 1998</u>	<u>Program</u>
<u>Product Development Property - N/A</u>						
<u>Support and Management Property - N/A</u>						
<u>Test and Evaluation Property - N/A</u>						
Subtotal Product Development				874	1,223	Cont
Subtotal Support and Management				0	0	
Subtotal Test and Evaluation				0	0	
Total Project				874	1,223	Cont
					1,300	TBD
						TBD

Project 2053

Page 6 of 6 Pages

Exhibit R-3 (PE 0604750F)

Project 2053

Page 6 of 6 Pages

Exhibit R-3 (PE 0604750F)

1034

UNCLASSIFIED

PE NUMBER: 0604754F

PE TITLE: Joint Tactical Information Distribution System

UNCLASSIFIED

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE	February 1998
5 - Engineering and Manufacturing Development		PE NUMBER AND TITLE 0604754F Joint Tactical Information Distribution System							PROJECT P771	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
P771 JTIDS	COST (\$ In Thousands)	29,127	7,374	7,956	8,863	8,989	9,116	9,439	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

Joint Tactical Information Distribution System (JTIDS) is a communications component of the Tactical Digital Information Link (TADIL) designated Link-16, and is synonymous with the TADIL-J message standard. The Link-16 System provides the Air Force, Army, Navy, and Marine Corps Theater Command and Control (C2) elements, weapons platforms, and sensors with a secure, jam-resistant, high-capacity data link for use in a tactical combat environment. Link-16 permits rapid and secure exchange of essential C2 and status information through a network with all Link-16 terminals in the tactical theater.

The number of Air Force platforms hosting Link-16 is expanding, from C<sup>2</sup> aircraft (E-3, E-8, etc.) into the fighter, bomber, sensor, tanker, and other tactical fleets (F-15, F-16, RJ, ABCCC, B-2, B-52, etc.). Utilization of Link-16 in a joint environment requires the integration of terminals into these host platforms, and interoperability of Link-16 nets across all deployed joint and allied platforms. Integration encompasses hardware, software, operational, and logistics development activities for common platform requirements and for specific host platforms. Cross-platform activities include certification of individual Link-16 implementations to joint and allied standards, establishment of Service-wide net management procedures and operations, and test and sustainment activities.

This program is in budget activity 5 (Engineering Manufacturing and Development) because it supports development, integration and interoperability solutions, sustainment capabilities, and support of special projects.

**(U) Acquisition Strategy**

The JTIDS program office continues to manage the acquisition for the JTIDS family of terminals (Class 2/2H for the Air Force, Navy, and Marine Corps; Class 2M for the Army). Future acquisition of the Link 16 communications component (MIDS family) is now the responsibility of the Navy's Multifunctional Information Distribution System (MIDS) Joint International Program Office. Host platforms program and budget for JTIDS, MIDS (Fighter Data Link (FDL) and Low Volume Terminal derivatives) production terminals and for installation into operational units.

The Air Force Link 16 System Integration Office (SIO) provides for common development of integration and interoperability across all Air Force platforms and ensures that Link 16 is procured and maintained as a joint, end-to-end, command and control system.

Project P771

Page 1 of 17 Pages

Exhibit R-2 (PE 0604754F)

1035

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604754F Joint Tactical Information Distribution System

PROJECT

P771

FY1997

(\$ in thousands)

- (U) 100

PROGRAMS: Efforts associated with Acquisition and Integration of Class 2/2H and Fighter Data Link.

-- (U) Class 2/2H Terminals for E-3, E-8, F-15, RIVET JOINT, COBRA BALL, ABCCC, MAOC, and MCE platforms.

-- (U) Command and Control (C2) Terminal Acquisition Support.

--- Determined Terminal Technical and Configuration Requirements.

--- Established delivery schedule.

--- Coordinated Spare Requirements.

--- Established Maintenance Plans.

--- Established Maintenance Training Schedules.

- (U) 24,423

INTEGRATION: Continued efforts associated with integration of terminals into the various platforms.

-- (U) Ongoing integration support to AWACS, RIVET JOINT, ABCCC, MAOC, MCE, JSTARS, and F-22.

-- (U) Technical Improvements:

--- Technical support to AF Platforms to integrate Pre-Planned Product Improvements (P3I).

--- Assisted in processing P3I efforts.

-- (U) Field Support for F-15 Operations.

--- Provided two SJSs to Nellis AFB.

--- Supported flight training, exercises, and scenario development/demonstrations.

--- Supported Data Link Utility Evaluation through Operational Special Project (OSP) and follow-on activities.

--- Supported F-15 Electronic Combat Identification (CID) DT&amp;E and Follow-on Activities.

-- (U) Provided technical assistance to Boost Phase Intercept Programs.

--- High Gear Program: Tested sensor tracking of Theater Missile.

--- Airborne Interceptor: Established procedures for intercepting Theater Missile.

-- (U) Purchased MIDS terminals for early integration, testing, and prototype activity.

-- (U) Continued engineering studies for Link 16 into the F-16.

-- (U) Began Link 16 engineering studies for platform development/upgrade on F-15.

-- (U) Conducted Link 16 engineering studies on secondary platforms: Joint Stars, AWACS, ABCCC, Rivet Joint, AFMSS, A-10, and B-1.

-- (U) Investigated approaches to implementing a modern, COTS-based, open systems architecture processor between Link 16 host system processors and Link 16 terminals through a generic interface processor study and demonstration.

Project P771

Page 2 of 17 Pages

Exhibit R-2 (PE 0604754F)

1036

UNCLASSIFIED

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System	P771	
- (U) 3,515	INTEROPERABILITY: Efforts associated with ensuring Link-16 operates effectively across all Host Platforms. -- (U) AF Platform Interoperability. --- Supported multi-service interoperability tests. --- Supported All Service Combat Identification Evaluation Team (ASCIET) tests. --- Supported to Engineering Interoperability Review Groups (IORGS US/UK bilateral). --- Supported definition of Link-16 network structures to support Interoperability. --- Developed Enhanced Position Location Radio System (EPLRS)/Link-16 gateway. -- (U) Network Support. --- Air Force Network Design. ---- Provided network design expertise. ---- Determined network design for integration testing. ---- Provided network design for integration testing. ---- Maintained AF network design aid for operations. ---- Evaluated Navy network design aid for Air Combat Command (ACC) users. --- Investigated internet-networking of JTIDS and transport control internet protocol networks.		
- (U) 200	SUSTAINMENT: Efforts associated with ensuring fielded terminals are supported. -- (U) ISSA technical engineering software support at Warner Robins AFB. -- (U) Maintained and upgraded the SJSs, Link-16 Winnebagoes. -- (U) Maintained and upgraded the MULTI-LINK Translator and Display System (MTDS) prototype hardware.		
- (U) 889	TEST: Efforts associated with fielding terminals. -- (U) Support provided by the 46th Test Squadron. --- Software support. --- Platform integration support. --- Product improvement and special projects support. --- Regression test and integration. --- Product improvement/development support.		
- (U) \$ 29,127	TOTAL		

Project P771

Page 3 of 17 Pages

Exhibit R-2 (PE 0604754F)



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
P771

## 5 - Engineering and Manufacturing Development

0604754F Joint Tactical Information Distribution  
System

- (U) FY1998 (\$ in thousands)

JTIDS PROGRAMS: Efforts associated with Acquisition and Integration of Class 2/2H terminals

## - (U) 200 ACQUISITION SUPPORT

- (U) Write, execute and administer contracts for E-3, E-8, F-15, F-22, AWACS, JSTARS, RIVET JOINT, ABCCC, MAOC and MCE platforms.
- (U) Command and Control Terminal Acquisition Support
  - Determine technical and configuration requirements for existing and prospective platforms
  - Establish hardware delivery schedules
  - Establish maintenance plans
  - Establish maintenance training schedules
  - Coordinate spare requirements

## - (U) 350 TECHNICAL SUPPORT

- (U) Ongoing technical and programmatic support to for JTIDS users - AWACS, JSTARS, RIVET JOINT, ABCCC, MAOC MCE and F-22 platforms.
- (U) Technical Improvements:
  - Technical support to AF platforms for the purpose of integrating Pre-Planned Product Improvements (P3I)
  - Assist in executing P3I requirements
- (U) Assist in technical trouble shooting for platforms utilizing Class 2/2H terminals
- (U) Coordinate hardware availability and support equipment for interoperability certifications
- (U) Provide acquisition support to Time Slot Reallocation (TSR) software efforts
- (U) Manage Pre-Operational support of Class 2/2H hardware
- (U) Develop and coordinate terminal usage schedules for platforms developing JTIDS capability

## - (U) 100 DIMINISHING MANUFACTURING RESOURCES

- (U) Investigate Diminishing Manufacturing Sources
  - Identify problem electronic parts
  - Assess impacts to fielded hardware test support equipment
  - Develop resolution plans

Project P771

Page 4 of 17 Pages

Exhibit R-2 (PE 0604754F)

1038

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b>	<b>February 1998</b>
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>	<b>PROJECT</b>	
<b>5 - Engineering and Manufacturing Development</b>	<b>0604754F Joint Tactical Information Distribution System</b>	<b>P771</b>	

  

**SYSTEM INTEGRATION**

- (U) 3,246 **LINK-16 INTEGRATION:** Efforts associated with hardware and software integration of Link 16 terminals into Air Force platforms.
  - (U) On-going engineering integration support to F-15C, AWACS, RIVET JOINT, ABCCC, MAOC, MCE, and JSTARS.
  - (U) Engineering integration support.
    - New platforms to include F-15E, F-16, F-22, B-1, B-2, B-52, A-10, F-117, and Joint Strike Fighter.
    - Perform initial evaluation for new mission areas.
    - Integration cost reduction initiatives for interface processor.
  - (U) Technical Improvements:
    - Technical support for integration of Class 2 terminal P3I efforts.
    - Technical support and demos for Link 16 capacity enhancements.
    - Support development of Joint VMF/Link-16 gateway.
  - (U) Field Support.
    - Support special exercises and tests.
  - (U) Provide technical assistance to Link 16 Demonstration programs to include Project Strike (Link 16 delivery of information to support strikes on time critical targets).
  - (U) Generic Integration/Common Operating Environment (COE) support.
    - Integration cost reduction initiatives (Hardware/Software) across multiple platforms.
    - Provide support to ASC2A in developing common operating picture
    - Provide support in providing Link-16 capability (data in cockpit) for Expeditionary Force Experiment'98.

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b>	<b>February 1998</b>
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>	<b>PROJECT</b>	
<b>5 - Engineering and Manufacturing Development</b>	<b>0604754F Joint Tactical Information Distribution System</b>	<b>P771</b>	
<p>-- (U) 1,623 <b>LINK-16 INTEROPERABILITY:</b> Efforts associated with ensuring Link-16 operates effectively across all host platforms.</p> <ul style="list-style-type: none"> <li>-- (U) Support CAF/Joint certification testing.</li> <li>-- (U) Support development of interoperability matrices.</li> <li>-- (U) Support development of distributive interoperability testing initiatives.</li> <li>-- (U) Provide engineering support to interoperability working groups. (JORGs, US/UK bilateral, MIDS)</li> <li>-- (U) Support operational contingencies, multi-service operational tests, and exercises and evaluations (ASCIET, Roving Sands, Air Expeditionary Force Experiment, etc ).</li> <li>-- (U) Network Support: <ul style="list-style-type: none"> <li>--- Engineering Support to Air Force Network Design Facility</li> <li>---- Provide network design engineering expertise and training.</li> <li>---- Provide network design guidelines.</li> <li>--- Assist customers with network design problems.</li> <li>--- Evaluate/Develop Air Force and Joint Network Design Aids.</li> </ul> </li> <li>-- (U) Communication Support: <ul style="list-style-type: none"> <li>--- Evaluate/develop communications design aids, including tools for Joint Interface Control Officer/Service Interface Control Officer (JICO/SICO).</li> <li>--- Provide Engineering Support for Air Force Communications planning.</li> </ul> </li> <li>-- (U) Crypto Support: <ul style="list-style-type: none"> <li>--- Support Air Force Electronic Key Management Plan System support and joint key management plan development.</li> <li>--- Provide support to Joint Crypto working groups and planning efforts.</li> </ul> </li> <li>-- Spectrum Support: <ul style="list-style-type: none"> <li>--- Provide engineering support for Air Force Spectrum and Electromagnetic Compatibility (EMC) issues and tests.</li> </ul> </li> <li>-- Link-16 Gateways/Interfaces: <ul style="list-style-type: none"> <li>--- Interface to Various DII systems (GCCS).</li> <li>--- Interface via network protocols (TCP/IP, ATM, etc).</li> <li>--- Interface to Intel/COTS Products (NTM platforms).</li> </ul> </li> </ul>			

Project P771

Page 6 of 17 Pages

Exhibit R-2 (PE 0604754F)

1040

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution System	P771
<p>-- (U) 1,855    <b>LINK-16 EMD SUPPORT:</b> Efforts associated with fielding terminals.</p> <p>-- (U) Support Operations Support Working Groups.</p> <p>-- (U) Maintenance of Developmental Equipment:</p> <p>    --- Maintain and upgrade the SJS and Link-16 Winnebagoes.</p> <p>    --- Maintain suite of developmental terminals.</p> <p>    --- Maintain and Upgrade the Multi-Link Translator and Display System (MTDS) prototype hardware and software.</p> <p>-- (U) Test Support:</p> <p>    --- Platform integration support.</p> <p>    --- Special/Unique test support.</p> <p>    --- Operational Link-16 problem investigation support.</p> <p>-- (U) Fielding/Non-Recurring Training:</p> <p>    -- Initial/non-recurring training support.</p> <p>    -- Initial fielding support.</p> <p>-- (U) \$ 7,374    <b>TOTAL</b></p>			

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	P771
5 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System		
- (U) FY1999 (\$ in thousands)	<b>JTIDS PROGRAMS:</b> Efforts associated with Acquisition and Integration of Class 2/2H terminals		
- (U) 200	<b>ACQUISITION SUPPORT</b> -- (U) Write, execute and administer contracts for E-3, E-8, F-15, F-22, AWACS, JSTARS, RIVET JOINT, ABCCC, MAOC and MCE platforms. -- (U) Command and Control Terminal Acquisition Support --- Determine technical and configuration requirements for existing and prospective platforms --- Establish hardware delivery schedules --- Establish maintenance plans --- Establish maintenance training schedules --- Coordinate spare requirements		
- (U) 300	<b>TECHNICAL SUPPORT</b> -- (U) Ongoing technical and programmatic support to for JTIDS users - AWACS, JSTARS, RIVET JOINT, ABCCC, MAOC MCE and F-22 platforms. -- (U) Technical Improvements: --- Technical support to AF platforms for the purpose of integrating Pre-Planned Product Improvements (P3I) --- Assist in executing P3I requirements -- (U) Assist in technical trouble shooting for platforms utilizing Class 2/2H terminals -- (U) Coordinate hardware availability and support equipment for interoperability certifications -- (U) Provide acquisition support to Time Slot Reallocation (TSR) software efforts -- (U) Manage Pre-Operational support of Class 2/2H hardware -- (U) Develop and coordinate terminal usage schedules for platforms developing JTIDS capability		
- (U) 100	<b>DIMINISHING MANUFACTURING RESOURCES</b> -- (U) Investigate Diminishing Manufacturing Sources --- Identify problem electronic parts --- Assess impacts to fielded hardware test support equipment --- Develop resolution plans		

Project P771

Page 8 of 17 Pages

Exhibit R-2 (PE 0604754F)

1042

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System	P771	
<b>SYSTEM INTEGRATION</b>			
<ul style="list-style-type: none"> <li>-- (U) 3,578</li> <li>LINK-16 INTEGRATION: Efforts associated with integration of Link 16 terminals into Air Force platforms.</li> <li>-- (U) On-going engineering integration support to F-15C, AWACS, RIVET JOINT, ABCCC, MAOC, MCE, and JSTARS.</li> <li>-- (U) Engineering integration support.</li> <li>--- New platforms to include F-15E, F-16, F-22, B-1, B-2, B-52, A-10, F-117, and Joint Strike Fighter.</li> <li>--- Perform initial evaluation for new mission areas.</li> <li>--- Integration cost reduction initiatives for interface processor.</li> <li>-- (U) Technical Improvements: <ul style="list-style-type: none"> <li>--- Technical support for integration of Class 2 terminal P3I efforts.</li> <li>--- Technical support and demos for Link 16 capacity enhancements.</li> <li>--- Support development of Joint VMF/Link-16 gateway.</li> </ul> </li> <li>-- (U) Field Support. <ul style="list-style-type: none"> <li>--- Support special exercises and tests.</li> </ul> </li> <li>-- (U) Provide technical assistance to Link 16 Demonstration programs to include Project Strike (Link 16 delivery of information to support strikes on time critical targets).</li> <li>-- (U) Generic Integration/Common Operating Environment (COE) support. <ul style="list-style-type: none"> <li>--- Integration cost reduction initiatives (Hardware/Software) across multiple platforms.</li> <li>--- Provide support to ASC2A in developing common operating picture</li> <li>--- Provide support in providing Link-16 capability (data in cockpit) for Expeditionary Force Experiment'98.</li> </ul> </li> </ul>			

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System	P771	
<p>-- (U) 1,735 <b>LINK-16 INTEROPERABILITY:</b> Efforts associated with ensuring Link-16 operates effectively across all host platforms.</p> <ul style="list-style-type: none"> <li>-- (U) Support CAF/Joint certification testing.</li> <li>-- (U) Support development of interoperability matrixes.</li> <li>-- (U) Support development of distributive interoperability testing initiatives.</li> <li>-- (U) Provide engineering support to interoperability working groups. (IORGS, US/UK bilateral, MIDS)</li> <li>-- (U) Support operational contingencies, multi-service operational tests, and exercises and evaluations (ASCIET, Roving Sands, Air Expeditionary Force Experiment, etc ).</li> <li>-- (U) Network Support: <ul style="list-style-type: none"> <li>--- Engineering Support to Air Force Network Design Facility</li> <li>---- Provide network design engineering expertise and training.</li> <li>---- Provide network design guidelines.</li> <li>--- Assist customers with network design problems.</li> <li>--- Evaluate/Develop Air Force and Joint Network Design Aids.</li> </ul> </li> <li>-- (U) Communication Support: <ul style="list-style-type: none"> <li>--- Evaluate/develop communications design aids, including tools for Joint Interface Control Officer/Service Interface Control Officer (JICO/SICO).</li> <li>--- Provide Engineering Support for Air Force Communications planning.</li> </ul> </li> <li>-- (U) Crypto Support: <ul style="list-style-type: none"> <li>--- Support Air Force Electronic Key Management Plan System support and joint key management plan development.</li> <li>--- Provide support to Joint Crypto working groups and planning efforts.</li> </ul> </li> <li>-- Spectrum Support: <ul style="list-style-type: none"> <li>--- Provide engineering support for Air Force Spectrum and Electromagnetic Compatibility (EMC) issues and tests.</li> </ul> </li> <li>-- Link-16 Gateways/Interfaces: <ul style="list-style-type: none"> <li>--- Interface to Various DII systems (GCCS).</li> <li>--- Interface via network protocols (TCP/IP, ATM, etc).</li> <li>--- Interface to Intel/COTS Products (NTM platforms).</li> </ul> </li> </ul>			

Project P771

Page 10 of 17 Pages

Exhibit R-2 (PE 0604754F)

1044

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System	P771	
<p>-- (U) 2,043    <b>LINK-16 EMD SUPPORT:</b> Efforts associated with fielding terminals.</p> <p>-- (U) Support Operations Support Working Groups.</p> <p>-- (U) Maintenance of Developmental Equipment:</p> <p>    --- Maintain and upgrade the SJS and Link-16 Winnebagoes.</p> <p>    --- Maintain suite of developmental terminals.</p> <p>    --- Maintain and Upgrade the Multi-Link Translator and Display System (MTDS) prototype hardware and software.</p> <p>-- (U) Test Support:</p> <p>    --- Platform integration support.</p> <p>    --- Special/Unique test support.</p> <p>    --- Operational Link-16 problem investigation support.</p> <p>-- (U) Fielding/Non-Recurring Training:</p> <p>    -- Initial/non-recurring training support.</p> <p>    -- Initial fielding support.</p> <p>-- (U) \$ 7,956    <b>TOTAL</b></p>			

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604754F Joint Tactical Information Distribution

P771

System

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998)	29,321	8,557	8,616	TBD
(U) Appropriated Value	30,875	8,557		
(U) Adjustments to Appropriated Value				
a. General Congressional Reduction	-786	-991		
b. Small Business Innovative Research	-768	-192		
c. Omnibus and Other Above Threshold Reprogrammings				
d. Below Threshold Reprogrammings	-146			
e. Recissions	-48			
(U) Adjustments to Budget Years Since FY 1998 PB			-660	
(U) Current Budget Submit/FY 1999 President's Budget	29,127	7,374	7,956	TBD

## (U) Change Summary Explanation:

Funding: FY98 CGR and SBIR reductions (\$ -1,183) eliminates or significantly reduces specific platform support to the F-16, the Bombers and EFX exercise. Integration costs for these platforms expected to increase 25-50%. FY98 \$50K on withhold pending reprogramming for higher priorities. FY99 adjustment to fund other service priorities (-\$660K).

Schedule: Above reductions put F-16 delivery schedule at risk, could slip two years based on operational flight program cycles and required deadlines.

Technical: Eliminates B-1B, B-2, and B-52 generic integration solution work.

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	To Complete	Total Cost
(U) Other Proc AF, PE 27417F (AWACS), BA 7	16,100	3,400	300	0	0	0	0	50,900
(U) Other Proc AF, PE 27581F (JSTARS), BA 7	0	0	0	0	0	0	0	15,800
(U) Other Proc AF, PE 27412F (MCE), BA 7	0	22,100	15,000	0	0	0	0	143,900

Project P771

Page 12 of 17 Pages

Exhibit R-2 (PE 0604754F)

1046

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT
5 - Engineering and Manufacturing Development		0604754F Joint Tactical Information Distribution										P771
		System										
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	Complete	To	Total		
(U)	Other Proc AF, PE 35154F (AIA), BA 7	3,400	4,800	4,900	5,000	5,700	0	0	0	33,300		
- (U) <u>Related RDT&amp;E:</u>												
(U)- Program Element 0604770F / 0207581F E-8 (Joint STARS)												
(U)- Program Element 0207417F E-3 (AWACS)												
(U)- Program Element 0207412F Modular Control Equipment (MCE)												
(U)- Program Element 0207419F Airborne Battlefield Command and Control Center (ABCCCC)												
(U)- Program Element 0305154F AIA.												
(U) D. <u>Schedule Profile</u>												
(U)	Acquisition Milestones											
	- Milestone III FRP 2M	1	2	3	4	1	2	3	4			
(U)	T&E Milestones											
	- F-15 OSP Complete											
	- MCE IOT&E											
	- MS OT-III											
	- IOT&E Class 2M											
(U)	FDL Testing											
	- Initial Operational Assessment											
	- QT&E/QOT&E Complete											
	- Flight QOT&E Complete											
(U)	Contract Milestones											
	- FRP Class 2M											
Project P771												
										Page 13 of 17 Pages		Exhibit R-2 (PE 0604754F)

Exhibit R-2 (PE 0604754F)

Page 13 of 17 Pages

1047

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604754F Joint Tactical Information Distribution

P771

System

FY 1997

FY 1998

FY 1999

1

2

3

4

1

2

3

4

- FRP II

- FDL Award

- FDL Pilot Production Start

- FDL Initial Rate Production

- FDL Full Rate Production

(U) Host Platform Integration Start

- F-15E

- F-16

- F-22 (1992)

- B-1 (FY00 POM)

- B-2 (FY00 POM)

- B-52 (FY00 POM)

- A-10 (FY03)

- F-117 (FY04)

- Airborne Laser (ABL)

(U) Command and Control Platforms

- AWACS Link 16 Qual Complete

- JSTARS

Start Baseline Integration

Complete Baseline Integration

- RIVET JOINT

First Install

Complete (FY02)

- ABCCC

- MCE (P3I)

Installation Start

Installation Complete (FY00)

Project P771

Page 14 of 17 Pages

Exhibit R-2 (PE 0604754F)

1048

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0604754F Joint Tactical Information Distribution System	P771	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>		FY 1997	FY 1998
(U) Programs		100	
(U) Integration		24,423	
(U) Interoperability		3,515	
(U) Sustainment		200	
(U) Test		889	
(U) JTIDS PROGRAMS			
(U) Acquisition Support		200	200
(U) Technical Support		350	300
(U) Diminishing Manufacturing Resources		100	100
(U) SYSTEM INTEGRATION (Link 16)			
(U) Link-16 Integration		3,246	3,578
(U) Link-16 Interoperability		1,623	1,735
(U) EMD Activities		1,855	2,043
(U) TOTAL		29,127	7,374
NOTE 1: ESC reorganization resulted in a split between JTIDS and Link-16 efforts. Sustainment and parts of other efforts are now included under JTIDS PROGRAMS. The ongoing Link 16 integration functions are included under SYSTEM INTEGRATION.			
In future Descriptive Summaries, another BPAC will be used to facilitate separate tracking of the Link 16 SYSTEM INTEGRATION activities.			

Project P771

Page 15 of 17 Pages

Exhibit R-3 (PE 0604754F)

1049

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604754F Joint Tactical Information Distribution

P771

System

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
GEC-MARCONI	FFP	DEC 85	80,727	80,727	80,527	200	0	0	0	80,727
LOCKHEED	FFP	JUN 93	6,761	6,761	4,661	2100	0	0	0	6,761
GEC-MARCONI	FFP	JUN 93	850	850	850	0	0	0	0	850
CACD	FFP	JUN 93	1,072	1,072	1,072	0	0	0	0	1,072
MCAIR	CPFF	MAR 94	2,434	2,434	2,434	0	0	0	0	2,434
RADC	PO/616	Various	Various	Various	2,867	200	0	0	0	3,067
WR-ALC	PO/616	Various	Various	Various	2,966	0	0	0	0	2,966
NADEP	MIPR	Various	Various	Various	795	0	235	0	0	1,030
ACSI	FFP	SEP 94	492	492	492	0	0	0	0	492
VIASAT, INC.	FFP	Various	815	815	0	815	0	0	0	815
AF Platforms	PO/616	Various	Various	Various	0	169	0	0	0	169
NORTHROP GR	FFP	AUG 97	500	500	0	500	0	0	0	500
ROCKWELL	FFP	Various	2,080	2,080	0	2,080	0	0	0	2,080
HUGHES	FFP	Various	133	133	0	133	0	0	0	133
DRC	FFP	MAY 97	213	213	0	213	0	0	0	213
MIDSCO, Inc	MIPR	Various	4,251	4,251	0	3,850	0	0	0	4,250
MOTOROLA INC	FFP	Various	1,800	1,800	0	1,800	0	0	0	1,800
ALLIED SIGNAL	CPFF	Various	75	75	0	75	0	0	0	75
MCDONNELL DG	FFP	Various	2,582	2,582	0	2,582	0	0	0	2,582
BOEING	FFP	Various	869	869	0	869	0	0	0	869

Project P771

Page 16 of 17 Pages

Exhibit R-3 (PE 0604754F)

1050

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE		February 1998		PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE					
5 - Engineering and Manufacturing Development										0604754F Joint Tactical Information Distribution					
										System					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program					
<u>Support and Management Organizations</u>															
ESC	Various	Various	26,969	26,969	19,214	2,211	738	966	Continue	TBD					
CONTRACTOR	Various	Various	52,457	52,457	39,765	2,783	855	1,440	Continue	TBD					
SUPPORT															
MITRE	FPLOE	Various	89,900	89,900	77,340	7,619	4,546	4,550	Continue	TBD					
<u>Test and Evaluation Organizations</u>															
MT HOME AFB	PO/616	Various	Various	Various	416					416					
EGLIN AFB	PO/616	Various	Various	Various	826	928	1,000	1,000	Continue	TBD					
Government Furnished Property: NOT APPLICABLE															
Subtotal Product Development															
Subtotal Support and Management															
Subtotal Test and Evaluation															
Total Project															

Project P771

Page 17 of 17 Pages

Exhibit R-3 (PE 0604754F)

Project P771

Page 17 of 17 Pages

Exhibit R-3 (PE 0604754F)

1051

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604762F

UNCLASSIFIED

PE TITLE: Common Low Observable Verification System (CLOVerS)

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE	PROJECT
5 - Engineering and Manufacturing Development		0604762F Common Low Observable Verification System (CLOVerS)							February 1998	4683
		PE NUMBER AND TITLE								
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4683	Common Low Observable Verification System	0	0	4,901	2,440	972	0	0	0	8,313
	Quantity of RDT&E Articles	0	0	0	0	1	0	0	0	1

**(U) A. Mission Description and Budget Item Justification**

Common Low Observable Verification System (CLOVerS) is intended as an easily deployable flightline system to evaluate surface anomalies on low observable (stealth) aircraft. It will allow maintenance personnel to determine if a repair is needed, or if the repair performed was successful in restoring the low observable characteristic of the aircraft. CLOVerS is intended for use with the B-2, F-117, F-22, as well as future aircraft such as the Joint Strike Fighter, and the Darkstar Unmanned Aerial Vehicle. Key capabilities required include the ability to detect, locate, and resolve small surface defects, reduced measurement time (compared to existing verification methods), operation under less restrictive security measures, and a small deployment footprint. This program is in budget activity 5 - Engineering and Manufacturing Development, Research Category 6.4 because this program develops the Common Low Observable Verification System (CLOVerS).

**(U) Acquisition Strategy:**

All major contracts within this program element will be awarded using full and open competition.

**(U) FY 1999 (\$ in Thousands):**

- (U) \$500 Initiate technical assessment and cost benefit analysis (CBA) of potential solutions.
- (U) \$200 Establish formal cost estimates based on CBA
- (U) \$3,901 Award risk reduction contracts
- (U) \$300 Program Office Support
- (U) \$4,901 Total



**UNCLASSIFIED**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604762F Common Low Observable Verification

## System (CLOvers)

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total</u>
	0	0	0	Cost 0

(U) Previous President's Budget

(U) Appropriated Value

(U) Adjustments to Appropriated Value

### a. Cong Reductions

**b. SBIR**

**c. Omnibus or Other Above Threshold Reprogram**

#### d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/ 1999 President's Budget

**(U) Change Summary Explanation:**

**Funding:** CLOVerS is an FY99 new start

**Schedule: CLOVerS is an FY99 new start**

**Technical: None**

(U) C. Other Program Funding Summary (\$ in Thousands)

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost	TBD
0	0	0	0	1,458	2,807	1,446	Cont		

(U) PE1127F:Appn: Aircraft Procurement, AF (APAF) Budget Activity: Aircraft (A/C) Procurement/Common Support Equipment, Program Title: Common Low Observable Test Equipment

Project 4683

Page 2 of 5 Pages

1054

Exhibit R-2 (PE 0604762F)

**UNCLASSIFIED**

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE						
	0604762F Common Low Observable Verification System (CLOVerS)						
(U) D. Schedule Profile							
(U) Risk Reduction Contract Award	FY 1997	1	2	3	4	1	
(U) Cost Estimate Established							
(U) Tech Assessment/CBA Complete							

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604762F Common Low Observable Verification  
System (CLOVerS)PROJECT  
4683(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Risk Reduction Contracts	0	0	3,901
(U) EMD Preparation (CBA, Cost estimate establishment)			700
(U) Program Office Support			300
(U) Total			4,901

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	-----------------------	------------------

Product Development Organizations

TBD			0	0	0	0	0	3,901	TBD	TBD
-----	--	--	---	---	---	---	---	-------	-----	-----

Support and Management Organizations

ASC/SMD, WPAFB OH	Various		0	0	0	0	0	1,000	TBD	TBD
----------------------	---------	--	---	---	---	---	---	-------	-----	-----

Test and Evaluation Organizations

			0	0	0	0	0	0	TBD	TBD
--	--	--	---	---	---	---	---	---	-----	-----

Project 4683

Page 4 of 5 Pages

Exhibit R-3 (PE 0604762F)

1056

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
5 - Engineering and Manufacturing Development		0604762F Common Low Observable Verification System (CLOVerS)		4683	
Government Furnished Property: None					
Subtotal Product Development		0	0	3,901	TBD
Subtotal Support and Management		0	0	1,000	TBD
Subtotal Test and Evaluation		0	0	0	TBD
Total Project		0	0	4,901	3,412 8,313

Project 4683

Page 5 of 5 Pages

Exhibit R-3 (PE 0604762F)

Project 4683

Page 5 of 5 Pages

Exhibit R-3 (PE 0604762F)

1057

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604779F

PE TITLE: Joint Interoperability Tactical Command/Control

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**5 - Engineering and Manufacturing Development****0604779F Joint Interoperability Tactical Command/Control**

PROJECT

**Project**

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	COST (\$ In Thousands)	4,697	4,972	5,823	5,943	5,988	6,060	6,168	Continuing	TBD
JINTACCS										
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

JINTACCS is a Joint Staff directed program for the development and maintenance of tactical information exchange configuration items (CIs) and operational procedures. This program enables and ensures tactical command and control (C2)/weapons systems to be interoperable within an Air Force (AF), a joint (two or more US services or agencies) or combined (US and allied) environment. The JINTACCS program includes: joint development, interoperability certification, message standard implementation, and configuration management (CM) of US Message Text Formatting (USMTF) CIs; joint development, interoperability certification, message standard implementation, and CM. Link 11A/B, 4, 16, etc. (TADILs A/B, C, J, etc.). Air Force JINTACCS complies with and satisfies DoD Directive 4630.5. Air Force JINTACCS supports participation with the Army, Navy, Marines, Air Intelligence Agency, CINC Bloc, Joint Interoperability and Engineering Organization (JIEO) which acts as the Executive Agent, Joint Interoperability Test Command (JITC), and allied/combined equivalents. CINC, Service and agency (C/S/A) activities are governed by Joint Chiefs of Staff (JCS) approved documentation including Technical Interface Concepts, Technical Interface Design Plans (TIDPs), Military Standards (MIL-STDs), CJCSMs, and CJCSIs, NATO Standard Agreements (STANAGs) and operating procedures (ADATPs). Close liaison across each of the Service JINTACCS programs precludes duplication of efforts. Air Force platforms/systems participating in this program include: AWACS; ABCCC; MCE; AOC; Joint STARS; F-15C/D; F-15E; F-16; F-22; RC-135; R/SOCC, CBRN; IADS; ASOC; and TACP. Air Force JINTACCS supports the Assistant Secretary of Defense (ASD) directive on harmonization of US and NATO messages (e.g., ATO and ACO), and fulfills the Link 16 General Officer Steering Group (GOSG - ASC2A/CC, AFPEO/FB, SAF/AQI, ACC/DR) direction to develop and manage the Air Force JINTACCS CM Plan for TADIL (LINK) and MTF Message Standards (AFJCMF-TMMS). The JINTACCS program, formerly Ground and Amphibious Military Operation (GAMO), is directed by JCS Memorandum 205-72, dated 1 April 1971, as modified by a Secretary of Defense memorandum, "Reorganization of the DoD Program to Achieve Interoperability of Tactical C2 Systems for GAMO," dated 2 Aug 1977. The program complies with requirements of DoD Directive 4630.5, "Compatibility, Interoperability, and Integration of C3I Systems, Communications, and Intelligence (C3I) Systems," November 12, 1992, and DoD Instruction 4630.8, "Procedures for Compatibility, Interoperability, and Integration of C3I Systems," November 18, 1992. The JINTACCS program entails the compatibility and interoperability of C3 systems including tactical intelligence for joint or combined operations through the development and management of a joint architecture, tactical information exchange requirements process, interface definitions, message text formats (MTFs), Tactical Digital Information Links (TADILs), Variable Message Formats (VMF), and other combat data link standards. This includes the coordination of all combat data link and MTF certification testing and configuration management of message standard CIs under one program element. This project ensures C3/weapons system interoperability among all the CINCs, DoD agencies, and the services. Developmental certification testing is a pre-production requirement in accordance with DoDD 4630.5 and DoDI 4630.8. This program is in budget activity 5 - Engineering and Manufacturing Development, because it is designed to improve the interoperability of Tactical Command and Control (C2) Systems used in support of joint operations.

Project Project 1

Page 1 of 9 Pages

Exhibit R-2 (PE 0604779F)

1059

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604779F Joint Interoperability Tactical  
Command/Control

PROJECT

Project

## (U) Acquisition Strategy:

As the Air Force lead agent for a jointly directed program, JINTACCS provides level of effort technical support for increasing interoperability of AF programs through message text and data link standards implementation.

(U) FY 1997	
- (U) \$ 72	Directed Technical support (contractor support).
- (U) \$ 168	Began Joint testing of Iceland Air Defense System (IADS).
- (U) \$ 155	Continued acquisition of JTIDS Test Device (JTD)/enhancements.
- (U) \$ 100	Began development of follow-on automated test tools.
- (U) \$ 100	Continued Combat Air Force (CAF) and Joint certification testing of Airborne Command Control Center (ABCCCC).
- (U) \$ 100	Continued CAF and Joint certification testing of E-3.
- (U) \$ 100	Continued CAF and Joint testing of Regional Air Operations Center (RAOC)/AWACS Digital Information Link (RADIL).
- (U) \$ 732	Message Text Standards Configuration Management (contractor support).
- (U) \$ 277	NATO Message Text Standards configuration management.
- (U) \$ 647	Future information exchange development efforts.
- (U) \$ 60	Continued expansion of MTF certification testing to fielded systems.
- (U) \$ 546	TADIL configuration management (contractor support).
- (U) \$ 454	Link 16 Migration support (contractor support).
- (U) \$ 286	TADIL configuration management (contractor support).
- (U) \$ 300	Continued development of TADIL documentation on CD-ROM.
- (U) \$ 100	Continued modification of message standards supporting Theater Missile Defense.
- (U) \$ 200	Continued development of Digital Message Transfer Device (DMTD), Variable Message Format (VMF), and TADIL J capability.
- (U) \$ 100	Continued network design and aids development for JTIDS network design facility and architecture.
- (U) \$ 200	Started hardware/software integration for F-15E, F-16 Block 50/52, and RAOC/Sector Air Operations Center (SAOC).
- (U) \$ 4,697	<b>Total</b>

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604779F Joint Interoperability Tactical  
Command/Control

PROJECT

Project

(U) FY 1998

-	(U) \$	60	Direct technical support (contractor support).
-	(U) \$	135	Continue CAF testing of JSTARS.
-	(U) \$	135	Continue annual CAF and Joint certification testing requirements for IADS.
-	(U) \$	85	Continue development of automated test tools.
-	(U) \$	240	Continuing annual CAF and Joint certification testing requirements for E-3 Block 20/25/30/35, IADS and MCE (TADIL A, B, J).
-	(U) \$	135	Begin annual CAF and Joint certification testing requirements for MCE P3I TADIL J/Link 16.
-	(U) \$	60	Continuing annual CAF and Joint certification testing requirements for RADIL.
-	(U) \$	135	Begin CAF and Joint certification testing for Senior Troupe (TADIL A, B).
-	(U) \$	135	Begin CAF and Joint certification testing for Senior Scout (TADIL A).
-	(U) \$	135	Begin CAF and Joint certification testing for Contingency Theater Air Planning System (CTAPS)/ Theater Battle Management and Control System (TBMCS).
-	(U) \$	60	Begin CAF and Joint certification testing for ABCCC (TADIL J).
-	(U) \$	135	Begin CAF and Joint certification testing for Battlefield Situation Display (BSD) (TADIL A, B, J).
-	(U) \$	100	Existing automated test tool upgrades (JTD, Simulation Modeling Analysis Reporting Test System (SMARTS)).
-	(U) \$	532	Message Text Standards configuration management (contractor support).
-	(U) \$	177	NATO Message Text Standards configuration management (contractor support).
-	(U) \$	347	Future information exchange development efforts.
-	(U) \$	60	Direct technical support (contractor support).
-	(U) \$	60	Continue expansion of MTF certification testing to fielded systems.
-	(U) \$	835	TADIL configuration management (contractor support).
-	(U) \$	454	Link 16 migration support (contractor support).
-	(U) \$	275	TADIL configuration management (contractor support).
-	(U) \$	94	Continue modification of message standards supporting TMD.
-	(U) \$	94	Continue development of DMTD and VMF standards.
-	(U) \$	100	Continue network design and aids development for JTIDS network design facility and architecture.
-	(U) \$	120	Hardware/software integration technical support (contractor support).
-	(U) \$	150	Continue hardware/software integration for F-15E, F-16 Block 50/52, RAOC/SAOC.
-	(U) \$	50	Start hardware/software integration for F-16 Block 40/42.
-	(U) \$	74	Continue development of TADIL documentation on CD ROM.
-	(U) \$	4,972	Total

Project Project 1

Page 3 of 9 Pages

Exhibit R-2 (PE 0604779F)

1061

UNCLASSIFIED



RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604779F Joint Interoperability Tactical Command/Control		February 1998
<p>(U) <b>FY 1999</b></p> <p>- (U) \$ 1,944 Certification Testing</p> <p>- (U) \$ 1,151 Message Text Formats</p> <p>- (U) \$ 2,728 TADILs Management</p> <p>(U) \$ 5,823 Total</p>			
<p>(U) <b>B. Program Change Summary (\$ in Thousands)</b></p>			
(U) Previous President's Budget (FY1998)		FY 1997	FY 1998
(U) Appropriated Value		5,606	5,929
(U) Adjustments to Appropriated Value		5,976	5,929
a. General Congressional Reduction		-223	-827
b. Small Business Innovative Research		-147	-130
c. Omnibus and other Above Threshold Reprogrammings			
d. Below Threshold Reprogrammings		-900	
e. Recissions		-9	
(U) Adjustments to Budget Years Since FY98 PB			-117
(U) Current Budget Submit/ FY 1999 President's Budget		4,697	5,823
(U) Change Summary Explanation:			TBD
<p>Funding: Reprogramming in FY97 reduced FFRDC support for JSTARS testing and for Configuration Management. FY98 CGR and SBIR reductions (\$957K) cut support by 75% from only USAF effort to operate NATO harmonization data/message link standardization, critical need to the USAF and mandatory for continued coalition operations. FY98 \$234K is pending reprogramming to other RDT&amp;E requirements and service priorities.</p> <p>Schedule: Reductions have delayed operational interoperability certification one year for JSTARS, ABCCC, Iceland Air Defense and Counterdrug Surveillance and Control System and will force the service to limit interaction on data exchange issues with our allies.</p> <p>Technical: None</p>			
<p>(U) <b>C. Other Program Funding Summary (\$ in Thousands) NOT APPLICABLE</b></p>			
Project Project 1		Exhibit R-2 (PE 0604779F)	
		Page 4 of 9 Pages	
		1062	



**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE						
	0604779F Joint Interoperability Tactical Command/Control						
	PROJECT Project						
	<u>FY 1997</u>		<u>FY 1998</u>				<u>FY 1999</u>
	1	2	3	4	1	2	3
Begin							
Complete							
- JSTARS							X
Begin							
Complete							

Project Project 1  
 Page 6 of 9 Pages  
 Exhibit R-2 (PE 0604779F)

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604779F Joint Interoperability Tactical  
Command/Control

PROJECT

Project

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Certification Testing	1,388	1,661	1,944
(U) Message Text Formats	706	706	1,151
(U) TADILs Management	2,603	2,605	2,728
(U) Total	4,697	4,972	5,823

Above categories have been changed beginning in FY97 to more accurately reflect program content.

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total	
					Prior to FY 1997	FY 1997
					<u>FY 1998</u>	<u>Budget to Complete</u>
						<u>Total Program</u>

Product Development Organizations

NONE

Project Project 1

Page 7 of 9 Pages

Exhibit R-3 (PE 0604779F)

1065

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT		
BUDGET ACTIVITY		PE NUMBER AND TITLE						
5 - Engineering and Manufacturing Development		0604779F Joint Interoperability Tactical Command/Control				Project		
<u>Support and Management Organizations</u>								
MITRE	CPAF	OCT 72	30,900	2,050	2,230	2,288	Continuing	TBD
B3H	CPFF	MAY 97	0	1,162	1,040	1,489	Continuing	TBD
COMPTEK	CPAF	OCT 92	2,600	566	600	600	Continuing	TBD
HTI	CPAF	OCT 94	1,300	0	0	0	0	1,300
Prog Office	Various	Various		243	187	248	Continuing	TBD
AF Participating	PO/616	OCT 97		676	915	1,198	Continuing	TBD
Test Unit (PTU)								
<u>Test and Evaluation Organizations</u>								
NONE								

Project Project 1

Page 8 of 9 Pages

Exhibit R-3 (PE 0604779F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
5 - Engineering and Manufacturing Development	0604779F Joint Interoperability Tactical Command/Control	February 1998	Project

Government Furnished Property: None									
	0	0	0	0	0	0	0	0	0
Subtotal Product Development	0	0	0	0	0	0	0	0	TBD
Subtotal Support and Management	0	0	0	0	0	4,697	4,972	5,823	TBD
Subtotal Test and Evaluation	0	0	0	0	0	0	0	0	0
Total Project	0	0	0	0	34,800	4,697	4,972	5,823	TBD

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604805F

UNCLASSIFIED

PE TITLE: Commercial Operations and Support Savings Initiative (COSSI)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604805F Commercial Operations and Support Savings Initiative (COSSI)								4771	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4771	Commercial Operations and Support Savings Initiative (COSSI)	0	0	27,937	31,040	31,013	30,777	30,740	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification:** This Engineering and Manufacturing Development (EMD) program aims at achieving operations and support (O&S) savings through insertion of commercial products and processes into fielded military systems. These savings are expected to result by reducing the costs of parts and maintenance, reducing the need for specialized equipment, increasing reliability, and increasing efficiency of subsystems. COSSI projects will be performed in two stages. In Stage I, each competitively selected, flexible cost share proposal will create the Non-Recurring Engineering (NRE) required to create a kit that can be used in a fielded military system and perform the testing needed to verify that inserted kits will produce O&S cost savings while at least maintaining the current system level of performance of the fielded system. Based on the results of a Stage I project, the Air Force will decide whether to proceed to Stage II. The goal in Stage II is to purchase a reasonable production quantity of kits without recompitation. This will be based on a fair and reasonable price (i.e., the value of the kits vice the cost of the kits to the Air Force under a Federal Acquisition Regulation (FAR) vehicle). Dual use technology was previously funded by the Defense Advanced Research Projects Agency (DARPA), first under the Technology Reinvestment Program (TRP) and then under DUAP. In FY 1997, the decision was made to begin transferring responsibility for DUAP from DARPA to the Services. The two existing DUAP efforts, DUAP S&T and the Commercial Operations and Support Savings Initiative (COSSI), were split and transferred into Service 6.2 and 6.4 PEs, respectively. This PE is the COSSI effort for the Air Force.

(U) **Acquisition Strategy:** Funding will be released to the SPDs for those projects that have been selected in that year for which they are the OPR. Other Transactions (OTs) for prototypes will be used during Stage I. OTs offer more flexibility and fewer regulatory requirements than a typical FAR contract. The authority to use OT was given by Section 804 of the Fiscal Year 1997 Defense Authorization Act.

(U) FY 1997: Not Applicable.

(U) FY 1998: Not Applicable.

(U) FY 1999 (\$ in Thousands):

- (U) \$27,937	Solicit projects that will reduce O&S costs of fielded military systems by insertion of commercial products and processes.
- (U) \$27,937	Total

Project 4771

Page 1 of 4 Pages

Exhibit R-2 (PE 0604805F)

1069

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604805F Commercial Operations and Support

PROJECT

4771

Savings Initiative (COSSI)

(U) B. Program Change Summary (\$ in Thousands):

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	0	0	0	0
(U) Appropriated Value	0	0	0	0
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions				
b. SBIR				
c. Omnibus/Other Above Threshold Reprogrammings				
d. Below Threshold Reprogrammings				
(U) Adjustments to Budget Years Since FY 1998 PB			27,937	
(U) Current Budget Submit/FY 1999 PB			27,937	Continuing

(U) Change Summary Explanation:

Funding: Dual use technology was previously funded by the Defense Advanced Research Projects Agency (DARPA), first under the Technology Reinvestment Program (TRP) and then under DUAP. In FY 1997, the decision was made to begin transferring responsibility for DUAP from DARPA to the Services. The two existing DUAP efforts, DUAP S&T and Commercial Operations and Support Savings Initiative (COSSI), were split and transferred into Service 6.2 and 6.4 PEs, respectively. This PE is the COSSI effort for the Air Force.

Schedule: Not Applicable.

Technical: Not Applicable.

(U) C. Other Program Funding Summary (\$ in Thousands): Not Applicable.(U) D. Schedule Profile:

	FY 1997	FY 1998	FY 1999
(U) RFP Release	1 2 3 4 1	1 2 3 4 1	2 3 4 X
(U) Contract Awards			

Project 4771

Page 2 of 4 Pages

Exhibit R-2 (PE 0604805F)

1070

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604805F Commercial Operations and Support

4771

Savings Initiative (COSSI)

(U) A. Project Cost Breakdown (\$ in Thousands):

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Solicits projects to reduce O&S costs of fielded military systems	0	0	27,937
(U) Total	0	0	27,937

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands):Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
TBD	TBD	TBD	TBD	TBD	0	0	0	27,937	Cont	Cont

Support and Management Organizations: Not Applicable.

Test and Evaluation Organizations: Not Applicable.

Project 4771

Page 3 of 4 Pages

Exhibit R-3 (PE 0604805F)

1071

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
5 - Engineering and Manufacturing Development	0604805F Commercial Operations and Support Savings Initiative (COSSI)		4771
<u>Government Furnished Property:</u> Not Applicable.			
Product Development Organization: Not Applicable.			
Support and Management Organizations: Not Applicable.			
Test and Evaluation Organizations: Not Applicable.			
Subtotal Product Development	0	0	27,937
Subtotal Support and Management	0	0	0
Subtotal Test and Evaluation	0	0	0
Total Project	0	0	27,937
			Cont
			0
			0
			Cont

Project 4771

Page 4 of 4 Pages

Exhibit R-3 (PE 0604805F)

1072

UNCLASSIFIED

PE NUMBER: 0604851F  
PE TITLE: ICBM EMD

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
5 - Engineering and Manufacturing Development		0604851F ICBM EMD									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		199,219	143,913	81,546	38,418	0	0	0	0	911,432	
3085 Guidance Replacement Program (GRP)		113,027	77,455	20,578	7,808	0	0	0	0	561,209	
4210 Propulsion Replacement Program (PRP)		83,434	66,458	60,968	30,610	0	0	0	0	347,465	
13C4 Strategic C4 Program*		2,758	0	0	0	0	0	0	0	2,758	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

\* Project funding for FY98 and beyond is included in the Minimum Essential Emergency Communications Network (MEECN) Program Element (PE 0303131F)

(U) A. Mission Description and Budget Item Justification

(U) ICBM modernization efforts will extend the operational life of the Minuteman ICBM weapon system. The Guidance Replacement Program (GRP) will replace failing Minuteman guidance system electronics. The Propulsion Replacement Program (PRP) will remanufacture all three Minuteman solid fuel stages to correct age-related degradations and maintain existing weapon system reliability. The Strategic C4 (Command, Control, Communications, and Computers) Program will modernize the command, control, communications, and computer systems associated with assured force execution/termination of the ICBM forces. These efforts were defined and validated in DoD's Nuclear Posture Review.

(U) This program is in Budget Activity 5 - Engineering and Manufacturing Development because the projects are being developed for the Air Force but have not received production approval. Program control is exercised at the project level.

(U) Acquisition Strategy:

(U) The ICBM System Program Office (SPO) awarded a Prime Integration Contract (PIC) to TRW on 22 Dec 97. All future efforts will be conducted under the ICBM PIC unless other strategies are deemed more appropriate.

(U) Guidance Replacement Program. An EMD contract was awarded in Aug 93 to develop, test, and replace selected guidance electronics and software. This cost plus-award-fee (CPAF) contract was issued following full and open competition. The GRP contract will transfer to the PIC after Low Rate Initial Production (LRIP) contract award now planned for 2<sup>nd</sup> Qtr, FY1998.

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 5 - Engineering and Manufacturing Development

0604851F ICBM EMD

(U) Propulsion Replacement Program. Planned acquisition will consist of all hardware and software modifications; integration and flight test support; delivery of remanufactured Stage 1, 2, and 3 motors; nuclear certification analysis tasks; and independent software certification. The PRP contract transfer to the PIC in Jan 98.

(U) Strategic C4. Work on this program in this Program Element was completed in FY97. Project funding for FY98 and beyond is budgeted in the Minimum Essential Emergency Communications Network (MEECN) Program Element (PE 0303131F).

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Total Cost
(U) Previous President's Budget FY1998 PB	202,153	137,944	86,990	1,198,096
(U) Appropriated Value	212,295	152,944		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-4,675	-5,433		
b. SBIR	-5,467	-3,598		
c. Omnibus or Other Above Threshold Reprogram	-2,600			
d. Below Threshold Reprogramming	-334			
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-5,444	
(U) Current Budget Submit/FY 1999 PB	199,219	143,913	81,546	911,432

(U) Change Summary Explanation: See individual projects for specifics changes.

(U) C. Other Program Funding Summary (\$ in Thousands):

PE 0101213F, Minuteman Squadrons, MMIII Modifications (APPN 14, BA-07, P-13)

(U) D. Schedule Profile: See individual programs.

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0604851F ICBM EMD

PROJECT

3085

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3085	Guidance Replacement Program (GRP)	113,027	77,455	20,578	7,808	0	0	0	0	561,209

(U) A. Mission Description and Budget Item Justification

(U) Ongoing upgrades are required to extend the service life of the Minuteman weapon system. The Joint Requirements Oversight Council validated the Mission Need Statement for a Future Guidance System for Intercontinental Ballistic Missiles (ICBM) on 5 November 1992. GRP replaces failing guidance system electronics, and preserves the option to configure the missiles with the Peacekeeper Mk 21 reentry vehicle and an advanced inertial measurement unit. The Engineering and Manufacturing Development (EMD) contract was awarded to Rockwell International in August 1993. GRP includes the EMD, production, and installation of replacement guidance components to extend the life of the operational Minuteman force. Funding reflected here is for EMD.

(U) FY 1997 (\$ in Thousands):

- (U) \$97,718 Hardware/software development.  
 - (U) \$4,991 Nuclear safety cross check analysis and independent validation and verification.  
 - (U) \$1,400 ICBM codes development.  
 - (U) \$4,960 Systems engineering and technical support.  
 - (U) \$3,185 Labs and support agencies.  
 - (U) \$773 Testing and other engineering support.  
 - (U) \$113,027 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$38,483 Continue hardware/software development.  
 - (U) \$4,997 Continue Nuclear Safety Cross Check Analysis and Independent Validation And Verification.  
 - (U) \$315 Complete ICBM codes development.  
 - (U) \$4,174 Continue systems engineering and technical support.  
 - (U) \$10,958 Continue labs and support agencies efforts.  
 - (U) \$17,957 Continue testing and other engineering support.  
 - (U) \$571 Pending reprogramming to fund higher priorities.  
 - (U) \$77,455 Total

Project 3085

Page 3 of 15 Pages

Exhibit R-2 (PE 0604851F)

1075

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3085

## 5 - Engineering and Manufacturing Development

0604851F ICBM EMD

## (U) FY 1999 (\$ in Thousands):

- (U) \$11,045 Continue hardware/software development.
- (U) \$1,400 Continue Nuclear Safety Cross Check Analysis and Independent Validation And Verification.
- (U) \$160 Continue labs and support agencies efforts.
- (U) \$7,973 Continue testing and other engineering support.
- (U) \$20,578 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	115,961	66,943	20,993	547,731
(U) Appropriated Value	121,911	81,943		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-2,783	-2,888		
b. SBIR	-3,167	-1,600		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-2,600			
e. Rescissions	-334			
(U) Adjustments to Budget Years Since FY 1998 PB			-415	
(U) Current Budget Submit/FY 1999 President's Budget	113,027	77,455	20,578	561,209

## (U) Change Summary Explanation (\$ in Thousands):

Funding: Congress added \$15,000 to FY98 PB request to preserve the option of incorporating the Mk-21 reentry vehicle on Minuteman III.

Schedule: EMD phase extended to accomplish closeout actions.

Technical: No significant impact.

## (U) C. Other Program Funding Summary (\$ in Thousands):

PE 0101213F, Minuteman Squadrons, MMIII Modifications (APPN 14, BA-07, P-13)

Project 3085

Page 4 of 15 Pages

Exhibit R-2 (PE 0604851F)

1076

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE					
5 - Engineering and Manufacturing Development		0604851F ICBM EMD					3085
(U) D. <u>Schedule Profile</u>							
		FY 1997		FY 1998		FY 1999	
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	
(U) Program Milestones							
Milestone III AFSARC							
(U) Engineering Milestones							
CDR							
(U) T&E Milestones			X*				
Combined DT&E/OT&E Start							
First Flight Test				X			
(U) Contract Milestones				X			
(U) Low Rate Initial Production							
* Started/Completed				X			



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604851F ICBM EMD

3085

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Hardware/Software Development	97,718	38,483	11,045
(U) ICBM Codes Contract	1,400	315	0
(U) Nuclear Safety Cross Check Analysis Contract	4,991	4,997	1,400
(U) Labs/Agencies	3,185	10,958	160
(U) SETA	4,960	4,174	0
(U) Other Engineering Support & Testing	773	17,957	7,973
(U) Other - Pending Reprogramming		571	
(U) Total	113,027	77,455	20,578

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Boeing-North American	C/CPAF	31 Aug 93	425,128	425,128	282,200	97,718	38,483	0	0	418,401
Codes Contract			4,662	4,662	2,947	1,400	315	0	0	4,662
TRW (Prime)	C/CPAF	Dec 97	11,045	11,045	0	0	0	11,045	0	11,045

Project 3085

Page 6 of 15 Pages

Exhibit R-3 (PE 0604851F)

1078

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											3085
5 - Engineering and Manufacturing Development											
PE NUMBER AND TITLE											
0604851F ICBM EMD											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
Support and Management Organizations											
NSCCA/IV&V	SS/CPAF	31 Mar 94	20,306	20,306	8,918	4,991	4,997	1,400	0	20,306	
TRW	SS/CPAF	4 Jan 94	43,275	43,275	34,111	4,960	4,174	0	0	43,245	
CSDL	SS/FFP	30 Jun 94	5,264	5,264	5,264	0	0	0	0	5,264	
Other Engineering Support	Various	31 Aug 93	43,195	43,195	7,763	885	18,225	7,973	7,808	42,654	
Other - Pending Reprogramming						571				571	
Test and Evaluation Organizations											
AGMC	PO		160	160	160	0	0	0	0	160	
White Sands	PO	Annual	649	649	317	207	125	0	0	649	
VAFB	PO/MIPR	Annual	11,180	11,180	587	1,101	9,492	0	0	11,180	
Maxwell	MIPR		27	27	27	0	0	0	0	27	
Sandia	MIPR		2,985	2,985	0	1,765	1,060	160	0	2,985	
Physics Int	MIPR		22	22	22	0	0	0	0	22	
Little Mountain	PO		33	33	25	0	13	0	0	38	
Government Furnished Property: None.											
Total											
Prior to FY 1997					Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
285,147					99,118	38,798	11,045		434,108		
56,056					10,836	27,967	9,373	7,808	112,040		
1,138					3,073	10,690	160		15,061		
342,341					113,027	77,455	20,578	7,808	561,209		
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
Project 3085											
Exhibit R-3 (PE 0604851F)											
Page 7 of 15 Pages											

Project 3085

Page 7 of 15 Pages

Exhibit R-3 (PE 0604851F)

1079

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604851F ICBM EMD

PROJECT

4210

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4210 Propulsion Replacement Program (PRP)		83,434	66,458	60,988	30,610	0	0	0	0	347,465

(U) A. Mission Description and Budget Item Justification

(U) The Propulsion Replacement Program will remanufacture all three solid fuel stages to correct age-related degradations, maintain existing weapon system reliability, and support Minuteman life extension. Any of the degradations (propellant cracking, case corrosion, liner deterioration, inhibitor deterioration, and liner debond) can cause catastrophic motor failure and, in turn, mission failure. RDT&E efforts will identify replacement materials that are no longer available or which have become environmentally unacceptable, reduce life cycle costs, and identify corrections to age-related degradations. This project incorporates only changes that can be demonstrated in an appropriate time frame to ensure the Minuteman propulsion system continues to meet existing performance capabilities and remains viable and supportable. The project entered Phase 2 (Engineering Manufacturing and Development) in FY94.

## (U) FY 1997 (\$ in Thousands):

- (U) \$20,568 Continued component reuse and materials replacement studies; continued stage design and development to include refurbishment.
- (U) \$20,610 Integrated program activities such as system engineering, program management, range support, Arnold Engineering Development Center (AEDC) testing, booster disassembly/assembly, booster transportation.
- (U) \$22,257 Continued fabrication, tooling and waste disposal for change verification motors.
- (U) \$3,402 Began software modification.
- (U) \$1,304 Began ordnance development effort.
- (U) \$15,293 Other
- (U) \$83,434 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$51,776 Continue component reuse and materials replacement studies, continue stage design and development to include refurbishment. Continue fabrication, tooling, and waste disposal for change verification motor testing.
- (U) \$8,292 Continue integration of program activities such as system engineering, program management, range support, AEDC testing, booster disassembly/assembly, booster transportation.
- (U) \$4,038 Continue software modification.
- (U) \$1,924 Continue ordnance development effort.
- (U) \$428 Pending reprogramming to fund higher priorities.
- (U) \$66,458 Total

Project 4210

Page 8 of 15 Pages

Exhibit R-2 (PE 0604851F)

1080

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0604851F ICBM EMD

PROJECT

4210

(U) FY 1999 (\$ in Thousands):

- (U) \$39,316 Continue component reuse and materials replacement studies, continue stage design and development to include refurbishment. Continue fabrication, tooling, and waste disposal for change verification motor testing.
- (U) \$17,260 Continue integration of program activities such as system engineering, program management, range support, AEDC testing, booster disassembly/assembly, booster transportation.
- (U) \$3,887 Continue software modification.
- (U) \$505 Continue ordnance development effort.
- (U) \$60,968 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	83,434	71,001	65,997	353,627
(U) Appropriated Value	87,567	71,001		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-1,833	-2,545		
b. SBIR	-2,300	-1,998		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions			-5,029	
(U) Adjustments to Budget Years Since FY 1998 PB			60,968	347,465
(U) Current Budget Submit/FY 1999 President's Budget	83,434	66,458		

## (U) Change Summary Explanation:

Funding: FY99 funding reduced due to savings from the ICBM Prime Integrating Contract and transfers to fund higher priority needs.

Schedule: No significant impact.

Technical: No significant impact.

Project 4210

Page 9 of 15 Pages

Exhibit R-2 (PE 0604851F)

1081

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4210

5 - Engineering and Manufacturing Development

0604851F ICBM EMD

(U) C. Other Program Funding Summary (\$ in Thousands):

PE 0101213F, Minuteman Squadrons, MMIII Modifications (APPN 14, BA-07, P-13)

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999			
	1	2	3	4	1	2	3	4
(U) Engineering Milestones								
(U) Stage PDR	X*							
(U) Stage CDR								
(U) T&E Milestones					X			
(U) Motor Testing	X*	X*	X*	X*	X	X	X	X
(U) Contract Milestones								
(U) Software Contract Award	X*							
(U) Begin DT&E/IOT&E					X			

\* Started/Completed

Project 4210

Page 10 of 15 Pages

Exhibit R-2 (PE 0604851F)

1082

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4210

## 5 - Engineering and Manufacturing Development

0604851F ICBM EMD

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Technology Insertion	54,115	56,165	50,098
(U) Software	3,402	4,038	3,887
(U) Other Program Costs	3,312	3,812	6,983
(U) SETA	7,312	2,015	0
(U) Other	15,293	0	0
(U) Other - Pending Reprogramming		428	0
(U) Total	83,434	66,458	60,968

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Thiokol	SS/CPAF	Aug 94	64,160	64,160	26,475	21,206	16,479	0	0	64,160
Aerojet	SS/CPAF	Jul 94	58,425	58,425	29,893	13,709	14,833	0	0	58,435
CSD	SS/CPAF	Jul 94	75,537	75,537	35,873	19,200	20,464	0	0	75,537
Thiokol	C/CPAF	Feb 97	3,228	3,228	0	1,304	1,924	0	0	3,228
Boeing NA	C/CPAF	Oct 96	3,406	3,406	0	1,399	2,007	0	0	3,406
Logicon	C/CPAF	Oct 96	5,437	5,437	0	1,482	1,526	1,604	825	5,437
GTE	C/CPAF	Oct 96	1,027	1,027	0	522	505	0	0	1,027
TRW (Prime)	C/CPAF	Dec 97	71,135	71,135	0	0	2,369	52,380	16,386	71,135

Project 4210

Page 11 of 15 Pages

Exhibit R-3 (PE 0604851F)

1083

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

5 - Engineering and Manufacturing Development

0604851F ICBM EMD

4210

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Support and Management Organizations</u>										
TRW	SS/CPAF	Oct 94	n/a	21,020	11,828	7,177	2,015	0	0	21,020
Program Integration			n/a	8,161	412	472	1,719	4,585	973	8,161
Other				15,967	222	15,293	150	152	150	15,967
Other - Pending Reductions							428			428
<u>Test and Evaluation Organizations</u>										
AEDC	PO	Periodic	n/a	9,533	1,276	1,670	1,960	2,247	2,380	9,533
Range (VAFB)	PO	Nov 99	n/a	9,975	0	0	79	0	9,896	9,975
Phillips Lab	PO			15	15	0	0	0	0	15

Government Furnished Property: None.

	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Subtotal Product Development	92,241	58,822	60,107	53,984	17,211	282,365
Subtotal Support and Management	12,462	22,942	4,312	4,737	1,123	45,576
Subtotal Test and Evaluation	1,291	1,670	2,039	2,247	12,276	19,523
Total Project	105,994	83,434	66,458	60,968	30,610	347,464

Project 4210

Page 12 of 15 Pages

Exhibit R-3 (PE 0604851F)

1084

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																																						
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																																							
5 - Engineering and Manufacturing Development		0604851F ICBM EMD								13C4																																																							
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																																							
13C4	Strategic C4 Program*	2,758	0	0	0	0	0	0	0	2,758																																																							
<p>* Project funding for FY98 and Beyond is included in the Minimum Essential Emergency Communications Network (MEECN) Program Element (PE 0303131F)</p> <p>(U) <u>A. Mission Description and Budget Item Justification</u></p> <p>(U) Effective in FY98, MMRT development was transferred to PE 0303131F, Minimum Essential Emergency Communications Network (MEECN), BPAC 2832, VLF/LF System Improvements.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <p>- (U) \$2,758 Initiated MMRT modification and integration into ICBM LCCs. (Only task.)</p> <p>- (U) \$2,758 Total</p> <p>(U) <u>FY 1998 (\$ in Thousands):</u> Transferred to MEECN (PE 0303131F)</p> <p>- (U) \$0 Total</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u> Transferred to MEECN (PE 0303131F)</p> <p>- (U) \$0 Total</p> <p>(U) <u>B. Program Change Summary (\$ in Thousands)</u></p> <table border="0"> <tr> <td></td> <td><u>FY 1997</u></td> <td><u>FY 1998</u></td> <td><u>FY 1999</u></td> <td><u>Total Cost</u></td> </tr> <tr> <td>(U) Previous President's Budget (FY 1998 PB)</td> <td>2,758</td> <td>0</td> <td>0</td> <td>2,758</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>2,817</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td>-59</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    a. Cong Reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    b. SBIR</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    d. Below Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    e. Rescissions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 1998 PB</td> <td>2,758</td> <td>0</td> <td>0</td> <td>2,758</td> </tr> <tr> <td>(U) Current Budget Submit/FY 1999 President's Budget</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>												<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>	(U) Previous President's Budget (FY 1998 PB)	2,758	0	0	2,758	(U) Appropriated Value	2,817				(U) Adjustments to Appropriated Value	-59				a. Cong Reductions					b. SBIR					c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogramming					e. Rescissions					(U) Adjustments to Budget Years Since FY 1998 PB	2,758	0	0	2,758	(U) Current Budget Submit/FY 1999 President's Budget				
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>																																																													
(U) Previous President's Budget (FY 1998 PB)	2,758	0	0	2,758																																																													
(U) Appropriated Value	2,817																																																																
(U) Adjustments to Appropriated Value	-59																																																																
a. Cong Reductions																																																																	
b. SBIR																																																																	
c. Omnibus or Other Above Threshold Reprogram																																																																	
d. Below Threshold Reprogramming																																																																	
e. Rescissions																																																																	
(U) Adjustments to Budget Years Since FY 1998 PB	2,758	0	0	2,758																																																													
(U) Current Budget Submit/FY 1999 President's Budget																																																																	

Project 13C4

Page 13 of 15 Pages

Exhibit R-2 (PE 0604851F)

1085

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 5 - Engineering and Manufacturing Development

**0604851F ICBM EMD**

## PROJECT

**13C4**

**(U) Change Summary Explanation:**

**Funding: No changes.**

**Schedule: No changes.**

**Technical: No changes.**

(U) C. Other Program Funding Summary (\$ in Thousands): See Minimum Essential Emergency Communications Network (MEECN) Program Element, PE 0303131F.

**(U) D. Schedule Profile**

		FY 1997		FY 1998		FY 1999	
(U)	MMRT development for ICBM LCCs	1 2	3	1 2	4 3	1 2	3
(U)	MMRT development for ICBM LCCs	X*		X*			

\* Started/Completed - (Transferred to MEECN (PE 0303131F) in FY98)

## Project 13C4

Page 14 of 15 Pages

Exhibit R-2 (PE 0604851F)

1086

**UNCLASSIFIED**

<b>RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)</b>		<b>DATE</b>	<b>February 1998</b>
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>	<b>PROJECT</b>	
<b>5 - Engineering and Manufacturing Development</b>	<b>0604851F ICBM EMD</b>	<b>13C4</b>	

Project 13C4

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604853F

UNCLASSIFIED

PE TITLE: Evolved Exp Launch Veh - EMD (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0604853F Evolved Exp Launch Veh - EMD (Space)								0004	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
0004 Evolved Expendable Launch Vehicle		0	26,572	280,297	338,319	305,557	244,450	14,822	0	1,210,017	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification:**

The Evolved Expendable Launch Vehicle (EELV) program is a space launch system development program. The mission of the EELV program is to partner with industry to develop a national launch capability that satisfies the Government's National Mission Model (NMM) requirements and reduces the cost of space launch by at least 25%. The EELV system includes the launch vehicles, infrastructure, support systems, and interfaces. EELV will provide up to two families of launch vehicles that will launch the Government portion of the NMM currently serviced by Titan II, Delta II, Atlas II, and Titan IV. Evolved from current expendable launch systems or components thereof, EELV will support military, intelligence, and civil mission requirements. This program element is in Budget Activity 5, Engineering and Manufacturing Development, because it supports engineering and manufacturing development of the EELV concept leading to deployment of a lower cost expendable launch vehicle system.

**(U) Acquisition Strategy:**

The EELV concept of a family of launch vehicles emphasizes commonality of hardware and infrastructure and economies of scale to enhance production, operations, and support efficiencies. Cost improvements will be achieved through commonality; leveraging the commercial market place; reduction of supporting infrastructure (launch pads, manufacturing facilities, workforce); and optimization of production and launch operations, processes, and rates. EELV is an ongoing competitive program that initially used a rolling downselect acquisition strategy. In August 1995 four initial contracts were awarded for the Low Cost Concept Validation (LCCV) phase. In December 1996 the Air Force downselected to two contractors - Lockheed Martin and Boeing (originally McDonnell Douglas) - for the Pre-Engineering and Manufacturing Development (Pre-EMD) phase. In the summer of 1998, contracts will be awarded for the Engineering and Manufacturing Development (EMD) and Initial Launch Services (ILS) phase. The EMD/ILS approach maintains competition throughout the life of the program, leverages the growing commercial launch market, caps the Government's EMD costs, and allows partnership with industry, while still reducing the program's overall cost to launch the NMM by at least 25% over existing systems. The EELV system will launch the government portion of the NMM through 2020.

**(U) FY 1997 (\$ in Thousands)**

(U) \$0 EELV funded in PE 0603853F in FY 1996, FY 1997, and FY 1998.

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
5 - Engineering and Manufacturing Development	0604853F Evolved Exp Launch Veh - EMD (Space)	0004		
(U) FY 1998 (\$ in Thousands)				
- (U) \$22,800 System development				
- (U) \$ 3,000 Systems Engineering				
- (U) \$ 772 Program management and other support costs				
- (U) \$26,572 Total				
(U) FY 1999 (\$ in Thousands)				
- (U) \$264,000 Continue system development				
- (U) \$ 12,200 Systems Engineering				
- (U) \$ 4,097 Program management and other support costs				
- (U) \$280,297 Total				
(U) B. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY 1998 PB)			FY 1997	FY 1998
(U) Appropriated Value			0	28,376
(U) Adjustments to Appropriated Value			0	28,376
a. Congressional General Reductions				- 1,132
b. Small Business Innovative Research				- 672
c. Omnibus or other above threshold reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY98 PB				- 13,653
(U) Current Budget Submit/FY 1999 President's Budget			0	26,572
				280,297
				1,210,017
				1,718,485

Project 0004

Page 2 of 5 Pages

Exhibit R-2 (PE 0604853F)

1090

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 5 - Engineering and Manufacturing Development

0604853F Evolved Exp Launch Veh - EMD (Space)

0004

## (U) Change Summary Explanation:

- Funding: The FY98 changes involved Congressional and SBIR reductions. FY99 funding reduced to fund higher priority AF projects. This funding implements the new EELV acquisition strategy which caps the two EMD contracts and moves the two test launches from EMD into ILS.
- Schedule: Not Applicable.
- Technical: Not Applicable.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total
(U) NRO (non-AF budget)	18,600	4,200							95,100*
(U) Missile Procurement, AF (PE 0305953F)				204,576	360,818	359,442	559,717	Cont.	Cont.
(U) DARPA (Non-AF budget) (PE 0603226E)									9,845**

## Related RDT&amp;E:

(U) EELV Demonstration and Validation (PE 0603853F)	44,263	60,437	0	0	0	0	0	0	173,153***
(U) EELV Operational System Development (PE 0305953F)			3,316	3,397	3,477	2,320	766	Cont.	Cont.

\* Total includes funding in FY96.

\*\* Total includes funding in FY94.

\*\*\* Total includes funding in FY95 and FY96.

## (U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) Defense Acquisition Board - Milestone II									
(U) Development/Initial Launch Services contract awards					X				
(U) Tailored Critical Design Review completed No Later Than Dec 98								X	
(U) Launch vehicle production start planned for 1st quarter FY00									

## EMD Module

(U) Defense Acquisition Board - Milestone II

(U) Development/Initial Launch Services contract awards

(U) Tailored Critical Design Review completed No Later Than Dec 98

(U) Launch vehicle production start planned for 1st quarter FY00

Project 0004

Page 3 of 5 Pages

Exhibit R-2 (PE 0604853F)

1091

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604853F Evolved Exp Launch Veh - EMD (Space) PROJECT 0004

## 5 - Engineering and Manufacturing Development

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) EMD Contracts	0	22,800	264,000
(U) Systems Engineering	0	3,000	12,200
(U) Program management and other support costs	0	772	4,097
(U) Total	0	26,572	280,297

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Lockheed Martin	C/FFP	Jun 98	500,000		0	0	11,400	132,000	416,600	560,000
Boeing	C/FFP	Jun 98	500,000		0	0	11,400	132,000	416,600	560,000
<u>Support and Management Organizations</u>										
SPO Mission Spt	Various	Various	N/A	N/A	0	0	472	2,697	11,048	14,217
FFRDC	SS/CPAF	Annual	N/A	N/A	0	0	3,000	12,200	51,400	66,600
Ranges	Various	Various	N/A	N/A	0	0	100	400	3,100	3,600
Other Cntr Spt	Various	Various	N/A	N/A	0	0	200	1,000	4,400	5,600
<u>Test and Evaluation Organizations</u>										
Not Applicable					0	0	0	0	0	0

Project 0004

Page 4 of 5 Pages

Exhibit R-3 (PE 0604853F)

1092

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT			
5 - Engineering and Manufacturing Development		0604853F Evolved Exp Launch Veh - EMD (Space)		0004			
Government Furnished Property: Not Applicable							
Subtotal Product Development		0	0	22,800	264,000	833,200	1,120,000
Subtotal Support and Management		0	0	3,772	16,297	69,948	90,017
Subtotal Test and Evaluation		0	0	0	0	0	0
Total Project		0	0	26,572	280,297	903,148	1,210,017

Project 0004

Page 5 of 5 Pages

Exhibit R-3 (PE 0604853F)

Project 0004

Page 5 of 5 Pages

Exhibit R-3 (PE 0604853F)

1093

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0605011F

UNCLASSIFIED

PE TITLE: RDT&amp;E FOR AGING AIRCRAFT

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
5 - Engineering and Manufacturing Development		0605011F RDT&E FOR AGING AIRCRAFT								4685	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4685 Aging Aircraft		0	0	4,901	4,978	14,583	29,035	43,364	0	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification:** This program is comprised of multiple efforts which will transition needed technologies from laboratory research and commercial technology development into fieldable tools or capabilities. Projects will target critical needs of the aging fleet such as corrosion, structural integrity, and improved non-destructive inspection (NDI) methods. Corrosion-related projects include hidden corrosion detection (NDI methods such as eddy current and thermography) and developing a corrosion prediction capability. Structural integrity projects will include the development of alternate repair capabilities and capability to predict widespread fatigue damage. In addition to the NDI projects addressing corrosion detection, other NDI projects will address multi-layer crack detection and detection of cracks under composite patches. These projects are focused on developing tools (NDI equipment, computer models) and capabilities (alternate repair processes) for Air Logistics Centers (ALCs) use in extending useful aircraft service life, resolving flight safety problems, or replacing components no longer procurable. Projects will typically yield a single, validated prototype system or capability that is production ready; final depot or field implementation (equipment purchases, tech order updates, training, etc.) will be the responsibility of the Major Commands (MAJCOMs) and ALCs. There is strong emphasis on developing solutions that will benefit multiple weapon systems, thereby reducing or eliminating stovepipe development of platform-specific solutions. This program is in Budget Activity 5, Engineering and Manufacturing Development, because projects/capabilities will be developed in this program then made available for procurement by already operational systems.

(U) **Acquisition Strategy:** Funding will be released to the ALCs for the projects they are OPR for in that year. OPR will determine the most appropriate contract vehicle, DEP contract or full and open competition, to accomplish the project. However, since this is an FY 1999 new start, the Air Force is still refining the acquisition strategy.

(U) FY 1997: Not Applicable.

(U) FY 1998: Not Applicable.

Project 4685

Page 1 of 5 Pages

Exhibit R-2 (PE 0605011F)

1095

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
5 - Engineering and Manufacturing Development	0605011F RDT&E FOR AGING AIRCRAFT	4685	
(U) FY 1999 (\$ in Thousands):			
- (U) \$3,159	Develop improved capabilities for corrosion prevention and control which will ultimately reduce the associated maintenance burden. Improve corrosion detection capabilities to decrease inspection times and/or detect corrosion earlier. Develop a corrosion prediction model which will allow the maintainer to better make repair decisions and improve future scheduling of corrosion maintenance actions.		
- (U)	- (U) Improve reliability of eddy current inspections for the detection of corrosion in large aircraft lap joints.		
- (U)	- (U) Improve usability of the D-Sight optical scanning system to provide a quick initial assessment of corrosion damage when an aircraft first enters the depot which will identify areas requiring a more detailed inspection.		
- (U)	- (U) Evaluate thermography and dripless bubbler to determine effectiveness in detecting corrosion around wing skin fasteners, thus eliminating the need to remove fasteners to do inspection and to implement improvements to the initial prototype to improve usability in a depot.		
- (U)	- (U) Optimize a lamb-wave ultrasound system to detect hidden corrosion within the shadow of installed wing skin fasteners.		
- (U) \$855	- (U) Develop a corrosion prediction model which will allow tailoring of depot work requirements.		
- (U)	Develop improved non-destructive inspection techniques that will reduce the time required to detect flaws and damage, such as fatigue cracking, corrosion, disbonds, and trapped moisture and/or allow the damage to be found earlier, thus allowing for less extensive or costly repairs.		
- (U)	- (U) Optimize a low-frequency eddy current system to be able to detect smaller flaws beneath relatively thick structure, particularly around fasteners.		
- (U)	- (U) Evaluate non-destructive techniques to determine most effective methods to inspect repair patch bond integrity and to monitor crack growth underneath the patch.		
- (U) \$887	- (U) Characterize key eddy current parameters, such as center frequency and lift-off curves, to optimize non-destructive inspection methodologies and improve the reliability of the inspections.		
- (U)	Develop technologies to ensure the continued structural integrity of aging weapon systems.		
- (U) \$4,901	- (U) Evaluate the applicability of an acoustic emission monitoring system to detect fatigue crack initiation and monitor crack growth.		
- (U)	Total		

Project 4685

Page 2 of 5 Pages

Exhibit B-2 (PE 0605011F)

Project 4685

Page 2 of 5 Pages

Exhibit R-2 (PE 0605011F)

1096

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY

5 - Engineering and Manufacturing Development

PE NUMBER AND TITLE

0605011F RDT&amp;E FOR AGING AIRCRAFT

PROJECT

4685

## (U) B. Program Change Summary (\$ in Thousands):

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget (FY 1998 PB)	0	0	0	
(U) Appropriated Value	0	0	0	
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions				
b. SBIR				
c. Omnibus/Other Above Threshold Reprogrammings				
d. Below Threshold Reprogrammings				
(U) Adjustments to Budget Years Since FY 1998 PB			4,901	
(U) Current Budget Submit/FY 1999 PB	0	0	4,901	Continuing

(U) Change Summary Explanation:

Funding: New start program.

Schedule: Not Applicable.

Technical: Not Applicable.

(U) C. Other Program Funding Summary: Not Applicable.

Project 4685

Page 3 of 5 Pages

Exhibit R-2 (PE 0605011F)

1097

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

5 - Engineering and Manufacturing Development

0605011F RDT&amp;E FOR AGING AIRCRAFT

PROJECT

4685

(U) D. Schedule Profile:

	FY 1997		FY 1998		FY 1999			
	1	2	3	4	1	2	3	4
(U) RFP Release								
(U) Contract Award								
(U) Large Area Optical Corrosion Detection Project Complete								
(U) Crack Propagation Monitoring Under Composite Patches Project Complete								
(U) Aircraft Crack Monitoring System Project Complete								
(U) Lamb Wave Ultrasonic Project Complete								

Project 4685

Page 4 of 5 Pages

Exhibit R-2 (PE 0605011F)

1098

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 5 - Engineering and Manufacturing Development

0605011F RDT&amp;E FOR AGING AIRCRAFT

4685

(U) A. Project Cost Breakdown (\$ in Thousands):

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Corrosion prevention and control techniques			3,159
(U) Improved non-destructive inspection capabilities			855
(U) Technologies to enhance structural integrity		0	887
(U) Total	0	0	4,901

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands):Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>To Complete</u>	<u>Total Program</u>
Product Development Organizations	Various	Various	None	None	0	0	0	4,901	Cont	Cont
Numerous Support and Management Organizations - In-House Support. Test and Evaluation Organizations - Not Applicable.										

Government Furnished Property - Not Applicable.

Subtotal Product Development	0	0	0	4,901	Cont	Cont
Subtotal Support and Management	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0

Total Project	0	0	0	4,901	Cont	Cont
---------------	---	---	---	-------	------	------

Project 4685

Page 5 of 5 Pages

Exhibit R-3 (PE 0605011F)

1099

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0603402F

PE TITLE: Space Test Program (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0603402F Space Test Program (Space)								2617	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2617 Free-Flyer Spacecraft Missions		46,367	38,696	0	0	0	0	0	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

Note: Program was not terminated. Space Test Program (Space) PE 0603402F changes to PE 0605864F in FY99. Future year funding is in the new PE 0605864F.

**(U) A. Mission Description and Budget Item Justification**

(U) The Space Test Program (STP) provides support to the DoD space research community by centrally financing acquisition of a host satellite or launch vehicle, the launch, and initial operations costs for experiments with military relevance whose scope ranges from basic research to advanced development. STP missions are the most cost effective way to flight test new space systems technologies, concepts and designs, providing an inexpensive way to:

- Demonstrate the feasibility of new space systems and technologies
- Improve operational design by characterizing the space environment, event, or sensor physics proposed for an operational system/system upgrade
- Provide early operational capabilities to evaluate usefulness or quickly react to new developments
- Perform operational risk reduction through direct flight test of prototype components
- Develop the knowledge base from which to plan new and improved operational systems and system upgrades
- Develop and test advanced small launch vehicle technology and capabilities

This DoD program provides the primary spaceflight capability to perform fly-before-buy, risk-reducing demonstrations of advanced technologies in operational space environments. The Secretary of Defense issued a policy statement in November 1995 reaffirming STP's role as the primary provider of spaceflight for the entire DoD space research community. Space Test Program is a Budget Activity 6 RDT&E Management and Support program.

**(U) Acquisition Strategy**

(U) The space research experiments that STP supports are justified, developed, financed, and delivered by various Service laboratories and DoD agencies, with the goal of improving DoD's current and future operational space systems' performance. Experiments are considered for spaceflight based on the priority that they are assigned by the annual DoD Space Experiments Review Board, a group that is independent of the STP Program Office, and is comprised of Air Force, Army, Navy, BMDO and other representatives with expertise in DoD operational space requirements. The Board gives the prioritized list of experiments to STP, who then seeks out the most cost effective means of spaceflight to maximize the number of experiments flown within the constraints of priority, opportunity and available funding. The most common spaceflight opportunities include piggybacking on military or commercial satellites, both foreign and domestic, and the various payload modes of the Space Shuttle. For those experiments whose requirements cannot be satisfied with these "secondary" opportunities, dedicated STP spacecraft and launch vehicle hardware are procured within the constraints of available funding and according to experiment requirements. These include Small and Medium Launch Vehicle class satellites, as well as Small Launch Vehicle class boosters (such as Pegasus, Taurus, and Lockheed Martin Athena). Medium Launch Vehicle class boosters are provided as required by PE 35119F and PE 35953F. If a particular manifested experiment fails to materialize or is deemed impractical to fly given current



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0603402F Space Test Program (Space) PROJECT 2617

## 6 - Management and Support

funding, or if the appropriate spaceflight opportunity becomes unavailable, STP shifts what resources remain to provide spaceflight support for the next highest priority experiments.

(U) The Air Force requires a stable funding level and the flexibility necessary to take advantage of whatever means of spaceflight is deemed to be most cost effective for a given experiment or complement of experiments. This flexibility is essential to take advantage of inexpensive "target of opportunity" space hardware, including operational spacecraft, where margin is usually firmly identified during the later stages of spacecraft development. This assures that the greatest amount of DoD space research is accomplished with the limited funds available. Without the requested funding, DoD would lose its most successful and most cost-effective capability to launch and test new technologies prior to their incorporation into our nation's very expensive and demanding operational space systems. Insufficient funding would also force each of the Services and DoD agencies to create individual launch capabilities in an attempt to duplicate STP's current low-cost, risk mitigating capability. Such a redundancy would result in the loss of the contractual economy of scale that a single space test organization provides, as well as the filtering function of the DoD Space Experiments Review Board in assuring quality experiments and minimum duplication.

## (U) FY 1997 (\$ in Thousands)

-	(U) \$11,171	Piggyback/secondary payload missions, mission planning, Aerospace Corp support, mission support.
-	(U) \$26,381	Complete STEP-4 satellite and Pegasus Launch Vehicle; continue ARGOS and TSX-5 satellites, TSX-5 launch service; FORTE and STEP-4 launch processing.
-	(U) \$2,582	Space Shuttle payload engineering, analysis, pre- and post-launch processing, and launch support.
-	(U) \$3,233	Start Taurus Launch Vehicle for Multispectral Thermal Imager (MTI) mission.
-	(U) \$3,000	Pending reprogramming to fund higher priorities.
-	(U) \$46,367	Total

## (U) FY 1998 (\$ in Thousands)

-	(U) \$8,441	Piggyback/secondary payload missions, mission planning, Aerospace Corp support, mission and program support.
-	(U) \$23,855	Complete ARGOS satellite; STEP-4 and ARGOS launch/operations support; start JAWSAT; continue MTI Taurus Launch Vehicle.
-	(U) \$2,900	Space Shuttle payload engineering, analysis, pre- and post-launch processing, and launch support.
-	(U) \$3,500	Initiate reusable upper stage/bus development activities for spaceflight of SERB approved experiments.
-	(U) \$38,696	Total

## (U) FY 1999 (\$ in Thousands)

-	(U) \$0	Total
---	---------	-------

Project 2617

Page 2 of 4 Pages

Exhibit R-2 (PE 0603402F)

1102

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management and Support</b>	<b>0603402F Space Test Program (Space)</b>		<b>2617</b>
<b>(U) B. Program Change Summary (\$ in Thousands)</b>			
		<u>FY 1997</u>	<u>FY 1998</u>
(U) Previous President's Budget (FY1998 PB)		43,439	56,157
(U) Appropriated Value		44,752	
(U) Adjustments to Appropriated Value			
a. Cong Gen Reductions		-1,174	
b. SBIR		-139	
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming		3,000	
e. Rescission		-72	
(U) Adjustments to Budget Years Since FY1998 PB			
(U) Current Budget Submit/FY1999 President's Budget		46,367	
			<u>Total Cost</u>
			Continuing
(U) Change Summary Explanation:			
Funding: \$3,000K added to program in FY97. This funding was subsequently reprogrammed to fund higher priorities. FY98 \$268K is pending reprogramming to fund higher priorities and for additional SBIR reduction. Space Test Program (Space) PE 0603402F changes to PE 0605864F in FY99. Future year funding is in the new STP PE 0605864F. \$9,300K FY99 funding rephased into FY00/01 due to FY97 execution. Remaining \$45,933K transferred to PE 0605864F.			
Schedule: STP EELV mission moved from FY01 to FY02.			
Technical: Not Applicable.			
<b>(U) C. Other Program Funding Summary (\$ in Thousands):</b>			
Not Applicable.			
<b>Related RDT&amp;E:</b>			
(U) PE 0305119F, Medium Launch Vehicles			
(U) PE 0305953F, Evolved Expendable Launch Vehicle			
(U) PE 0605864F, STP funding for FY99 and beyond			
Experiments are funded by many Science and Technology (S&T) PEs in Air Force, Army, Navy, DARPA, BMDO, DoE, NASA, and other programs.			
Project 2617	Page 3 of 4 Pages	Exhibit R-2 (PE 0603402F)	

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2617

## 6 - Management and Support

0603402F Space Test Program (Space)

(U) D. Schedule Profile These are anticipated launch dates. (Current projection. Experiments are added as new spaceflight opportunities and budget permits).

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) STS-80 CCM-A, MSX	X											
(U) STS-81 CREAM, MSX		X										
(U) STS-82 MSX		X										
(U) STS-83 CRYOFD, MSX		X										
(U) STS-84 RME-III, CREAM, MSX, SIMPLEX			X									
(U) STS-94* CRYOFD, PLUMES			X									
(U) MPTB (Classified Host) (S96-1)				X								
(U) FORTE (P94-1)				X								
(U) STS-85 CFE, MSX, MAHRSI (S96-5)				X								
(U) STS-86 SIMPLEX, CREAM, CCM-A				X								
(U) STEP4-EMPE, OOAM, DIDM (P95-1)				X								
(U) STS-87 MSX, SIMPLEX				X								
(U) POAM III (SPOT IV) (S96-2)				X								
(U) STS-89 CREAM, MSX, SIMPLEX				X								
(U) STS-91* CREAM, MSX, SIMPLEX				X								
(U) ARGOS - ESEX, USA, GIMI, CIV, SPADUS, HIRAAAS, HTSSE II, EUVIP, CERTO (P91-1)									X			
(U) STS-88 MightySat I, MSX, SIMPLEX										X		

\*New spaceflight opportunity since FY98PB.

Project 2617

Page 4 of 4 Pages

Exhibit R-2 (PE 0603402F)

1104

UNCLASSIFIED

PE NUMBER: 0604256F

UNCLASSIFIED

PE TITLE: Threat Simulator Development

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0604256F Threat Simulator Development									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	56,456	51,501	32,582	37,400	39,561	37,535	38,272	Continuing	TBD	
3321	Electronic Warfare Ground Test Resources	43,355	50,030	30,658	30,593	31,285	28,418	28,947	Continuing	TBD	
2907	Electronic Combat Intel Support	1,724	1,471	1,924	1,974	2,022	1,936	1,972	Continuing	TBD	
7500	Foreign Materiel Acquisition/Exploitation	0	0	0	4,833	6,254	7,181	7,353	Continuing	TBD	
6510	Flight Test Resources	9,506	0	0	0	0	0	0	0	0	
2900	Radar Target Scatter (RATSCAT) Upgrade	1,871	0	0	0	0	0	0	0	0	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) A. Mission Description and Budget Item Justification: This PE provides funding for the elements necessary to support the AF Electronic Warfare (EW) Test Process. This test process provides a scientific methodology to ensure the effective disciplined and efficient testing of AF EW and avionics systems. Each capability or facility improvement is pursued in concert with the others so as to avoid duplicate capabilities while at the same time producing the proper mix of test resources needed to support the AF EW Test Process. This PE provides funding for the management and technical oversight of implementation activities, the Air Force-led tri-Service effort to establish a common modeling and simulation architecture, measurement facilities operation and improvements, hardware in the loop test facilities operation and improvements, installed system test facility improvements, and development and improvement of open air threat simulators for flight testing. This PE also provides funding for planning, management, budgetary, and technical support to the Air Force for corporate-level implementation of the Electronic Warfare (EW) Test Process and for improvement and modernization (I&M) and application of the test and evaluation (T&E) infrastructure. Support includes requirements definition and analysis, project planning, programming and budgeting, technical oversight, and application of T&E facility I&M. Products include studies, analyses, and related documentation. This PE provides funding to support the acquisition and exploitation efforts of the Foreign Materiel Program, as well as to support EW intelligence efforts, beginning in FY 00. In FY 98, Projects 6510, Flight Test Resources, and 2900, RATSCAT Upgrade, were combined into Project 3321, Electronic Warfare Ground Test Resources, as part of consolidation and simplification efforts in T&E investment accounts. Contracts funded from this program are predominately awarded on the basis of full and open competition. This Program Element is in Budget Activity 6, Management and Support, because it is a Research and Development (R&D) effort for Improvement and Modernization of T&E capabilities at Air Force Test Centers.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0604256F Threat Simulator Development

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost  
Continuing

	FY 1997	FY 1998	FY 1999	
(U) Previous President's Budget (FY 1998 PB)	53,496	51,846	36,238	
(U) Appropriated Value	55,435	54,346		
(U) Adjustments to Appropriated Value				
a. Cong Adjustments	-1,203	-2,139		
b. SBIR	-736	-706		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	3,100			
e. Rescissions	-140			
(U) Adjustments to Budget Years Since FY 1998 PB			-3,656	
(U) Current Budget Submit/FY 1999 President's Budget	56,456	51,501	32,582	Continuing

## (U) Change Summary Explanation:

Funding:

FY 99:

Terminated AAIS (-5,119), JMASS models (3,300), minor adjustments (-1,837).

Schedule: None.

Technical: None.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		0604256F Threat Simulator Development									
(U) C. Other Program Funding Summary (\$ in Thousands)											
Appropriation: Military Construction, Budget Activity: Defense-Wide Mission Support, 6 Program Title: Electronic Combat Integrated Test (ECIT)		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	
		4,900							N/A	16,000	
Appropriation: RDT&E Budget Activity: Defense-Wide Mission Support, 6 Program Title: Central Test and Evaluation Investment Program (CTEIP)		37,600	39,643	26,100					N/A	124,557	
Related RDT&E:											
(U) PE 0604759F, Major T&E Investment											
(U) PE 0604735F, Combat Training Ranges											
(U) D. Schedule Profile											
(U) Real Time Electromagnetic Digitally Controlled Analyzer (REDCAP) Surveillance Radar Integration (Option C) Complete		FY 1997			FY 1998		FY 1999				
		1	2	3	4	1	2	3	4		
				X							
(U) JMASS Releases											
(U) ECIT Infrastructure and Generic Test Capability IOC		X								X X	
(U) Digital Integrated Air Defense System Baseline IOC											
(U) AAIS Program Terminated						X					
Page 3 of 15 Pages											
Exhibit R-2 (PE 0604256F)											

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604256F Threat Simulator Development

3321

COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3321 Electronic Warfare Ground Test Resources	43,355	50,030	30,658	30,593	31,285	28,418	28,947	Continuing	TBD

(U) A. **Mission Description and Budget Item Justification:** The AF requires a comprehensive set of test facilities to implement the Air Force Electronic Warfare (EW) Test Process. In order that program risk can be managed effectively throughout the weapon system acquisition process, and test and evaluation (T&E) be conducted effectively and efficiently, a spectrum of T&E capabilities from modeling and simulation through open-air ranges is required. The EW Test Process Support task provides for investment management, coordinated technical oversight, and application of EW T&E facilities, including studies, analyses, and related documentation. The Joint Modeling and Simulation System (JMASS) is an Air Force-led, tri-service project to establish a common, DoD-wide, digital simulation architecture in support of T&E. The current JMASS program supports model development to meet the needs of the B-1B Defensive System Upgrade Program (DSUP). The JMASS project includes development of a limited set of threat and environment models to support acquisition and test of multiple programs including the B-1B, F-22, and Joint Strike Fighter (JSF). The Radar Target Scatter (RATSCAT) upgrade project provides improvements to the RATSCAT measurement facility at Holloman AFB, NM, to support radar cross section (RCS) measurement requirements of DoD customers. The Hardware in the Loop (HITL) test facilities evaluate electronic support and countermeasures effectiveness prior to installation on the aircraft. Together, the two AF HITL facilities, the Air Force Electronic Warfare Evaluation Simulator (AFEWES) and the Real Time Electromagnetic Digitally Controlled Analyzer and Processor (REDCAP), provide the ability to realistically evaluate hardware components against manned hardware threat representations early enough to affect final system design. FY98 is the last year of T&E infrastructure funding for operations at the government-owned-contractor-operated REDCAP facility in Buffalo, NY. In subsequent years, REDCAP test functions will transition to the Digital Integrated Air Defense System (DIADS) HITL at Edwards AFB, CA. The Electronic Combat Integrated Test (ECIT) project upgrades the AF Installed System Test Facility (ISTF) at Edwards AFB, CA. This ISTF consists of a large, instrumented, anechoic chamber which provides for evaluation of an EW system when installed on its host aircraft, both prior to and throughout the flight test program. The Advanced Airborne Interceptor Simulator (AAIS) is a project to develop an advanced signal system to represent airborne threats for EW open-air testing. In FY 98, Projects 6510, Flight Test Resources, and 2900, RATSCAT Upgrade, were combined into Project 3321, Electronic Warfare Ground Test Resources.

Project 3321

Page 4 of 15 Pages

Exhibit R-2 (PE 0604256F)

1108

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0604256F Threat Simulator Development	3321	
(U) FY 1997 (\$ in Thousands):			
- (U) \$1,900	EW Test Process Support. Began implementation of the EW test facilities network. Continued the analysis and planning of upgrades to the network to improve implementation of the EW Test Process and support emerging EW technologies. Conducted assessment of AF test and training range requirements and capabilities.		
- (U) \$8,558	JMASS. Improved model and scenario development tools, such as visual programming, graphical user interface, hardware-in-the-loop and man-in-the-loop, and data management capabilities. Increased simulation speed. Increased the number of hardware platforms that JMASS can support. Supported a growing library of models, and provided user training, support and documentation. Released Generic Aircraft and Electronic Countermeasures (ECM) models along with upgraded surface-to-air missile (SAM) flyout models.		
- (U) \$2,832	AFEWES Operation and Upgrade. Continued AFEWES operation in support of Air Force, Army, Navy, and non-DoD test customers. Completed Infrared/Ultraviolet (IR/UV) laboratory upgrades. Began work on the Advanced Simulator Modification and the Track-While-Scan (TWS) 5 simulation.		
- (U) \$6,527	REDCAP Operation and Upgrade. Continued operation in support of Air Force, Army, Navy, and non-DoD test customers. Integrated Option C radar signature simulations into the Digital Integrated Air Defense System (DIADS) model. Developed Advanced C3 Upgrade and KC3 Upgrade. Began Advanced Command, Control and Communications (C3) Upgrade and KC3 Upgrade.		
- (U) \$18,792	ECIT. Continued development of infrastructure and generic EW and avionics installed system test capabilities. Completed preliminary design of the ECIT Infrastructure and Generic Test Capability (I&GTC).		
- (U) \$4,746	EC Test and Training Range Operations and Upgrade. Funded development of threat system simulators (emitters, signal sources, real world threat systems with instrumentation) and intelligence upgrades of existing systems to support Air Force Special Operations Command requirements.		
-(U)\$43,355	Total		
(U) FY 1998 (\$ in Thousands):			
- (U) \$1,501	EW Test Process Support. Continue implementation of the EW test facilities network.		
- (U) \$9,469	JMASS. Improve JMASS capability by initiating and achieving IOC of Version 4. Adapt JMASS to a wider variety of computer platforms, including personal computers (PC). Increase JMASS efficiency by optimizing the architecture. Adapt commercial off-the-shelf (COTS) tools for front-end model development and post-processing viewing and analysis. Operate and maintain EW model library. Begin development and implementation of JMASS compliant models of surface-to-air missiles (SAMs), Air-to-Air Missiles (AAMs) and Airborne Interceptors (AIs) to support acquisition and test of multiple programs including the B-1, F-22, and Joint Strike Fighter (JSF).		
- (U) \$1,973	RATSCAT Upgrades. Integrate mobile Bistatic Coherent Measurement System (BICOMS) radar with BICOMS control and instrumentation infrastructure. Procure and begin integration of RATSCAT Advanced Measurement System (RAMS) radar replacement hardware.		
- (U) \$3,525	AFEWES Operation and Upgrade. Continue AFEWES operation in support of Air Force, Army, Navy, and non-DoD test customers. Continue Advanced RF and IR/UV HITL Simulator modifications. Upgrade the RF clutter environment to better simulate the open air range and integrate a semi-active SAM simulation into AFEWES.		

Project 3321

Page 5 of 15 Pages

Exhibit R-2 (PE 0604256F)

Project 3321

Page 5 of 15 Pages

Exhibit R-2 (PE 0604256F)

1109

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604256F Threat Simulator Development

3321

- (U) \$4,912 REDCAP/DIADS. Transition Integrated Air Defense System (IADS) HITL capability from REDCAP, Buffalo, NY, to the Air Force Flight Test Center (AFFTC) and establish Digital IADS (DIADS) HITL capability for support of Air Force, Army, Navy and non-DoD test customers. Complete development of Airborne Warning Model and Advanced C<sup>3</sup> Upgrade, and begin development of additional IADS configurations. Begin integration with ECIT.

- (U) \$20,844

ECIT. Continue development and start procurement of infrastructure and generic EW and avionics installed system test capabilities. Complete Critical Design Review (CDR) of major I&GTC subsystems, including Network and Controls, Simulation, Radio Frequency (RF) Generation and Injection, RF Free Space Excitation, and Instrumentation.

- (U) \$7,806

- (U) \$50,030 AAIS. Terminate program.

- (U) \$50,030 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$400 EW Test Process Support. Conduct requirements analyses in support of Air Force investments in EW test infrastructure. Complete cost-benefit analysis of digital modeling and simulation (M&S) in support of the EW Test Process.

- (U) \$11,436

JMASS. Complete development and achieve follow-on capability (FOC) of Version 4, which affords compatibility with the DoD High-Level Architecture (HLA). Complete transition of JMASS to PCs and other computer platforms. Complete architecture modification. Complete adaptation of COTS tools. Operate and maintain EW model library. Complete development and integration of JMASS-compliant SAM, AAM, and AI models to support the needs of a single customer. Develop additional threat models to support other DoD customers.

- (U) \$1,928

- (U) \$2,609 RATSCAT Upgrades. Achieve IOC of BICOMS Mobile Radar. Integrate and achieve IOC of RAMS Radar Replacement.

- (U) \$1,409

AFEWES Operation. Continue AFEWES operation in support of Air Force, Army, Navy, and non-DoD test customers. Complete development of semi-active SAM simulations, and begin development of Advanced Simulator Modifications.

- (U) \$12,876

DIADS HITL. Begin DIADS support to Air Force, Army, Navy, and non-DoD test customers. Complete Verification and Validation (V&V) efforts required to achieve IOC of DIADS baseline. Begin development of external linking and BLUE IADS capabilities.

- (U) \$12,876 ECIT. Complete development of the infrastructure and generic test capability. Begin integration with CTEIP-funded Generic Radar Target Generator (GRTG), Infrared Sensor Stimulator (IRSS), and Communications-Navigation-Identification (CNI) simulator.

- (U) \$30,658 Total

Project 3321

Page 6 of 15 Pages

Exhibit R-2 (PE 0604256F)

1110

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
6 - Management and Support		0604256F Threat Simulator Development		3321
(U) B. <u>Program Change Summary (\$ in Thousands)</u>				
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Appropriated Value	38,917	50,305	34,275	
(U) Adjustments to Appropriated Value	40,856	52,805		
a. Cong Adjustments	-601	-2,089		
b. SBIR		-686		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	3,100			
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-3,617	
(U) Current Budget Submit/FY 1999 President's Budget	43,355	50,030	30,658	Continuing
(U) Change Summary Explanation:				
Funding:				
FY 99:				
Terminated AAIS (-5,119), JMASS models (3,300), minor adjustments (-1,798).				
Schedule: None.				
Technical: None.				

Project 3321

Page 7 of 15 Pages

Exhibit R-2 (PE 0604256F)

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3321

## 6 - Management and Support

0604256F Threat Simulator Development

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Appropriation: Military Construction									
Budget Activity: Defense-Wide Mission Support, 6									
Program Title: Electronic Combat Integrated Test (ECIT)	4,900							N/A	16,000
Appropriation: RDT&E									
Budget Activity: Defense-Wide Mission Support, 6									
Program Title: Central Test and Evaluation Investment Program (CTEIP)	37,600	39,643	26,100					N/A	124,557

## Related RDT&amp;E:

(U) PE 0604759F, Major T&E Investment  
 (U) PE 0604735F, Combat Training Ranges

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999
(U) REDCAP Surveillance Radar	1	4	
Integration (Option C) Complete	2	3	4
(U) JMASS Releases.	3	2	3
(U) ECIT Infrastructure and Generic Test Capability (I&GTC) IOC	X		
(U) Digital Integrated Air Defense System Baseline IOC			X
(U) AAIS Program Terminated		X	X

Project 3321

Page 8 of 15 Pages

Exhibit R-2 (PE 0604256F)

1112

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0604256F Threat Simulator Development								2907	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2907	Electronic Combat Intel Support	1,724	1,471	1,924	1,974	2,022	1,936	1,972	Continuing	TBD	
<p>(U) <u>A. Mission Description and Budget Item Justification</u> This project provides funding to support Foreign Materiel Operational Test and Evaluation (FMOT&amp;E), which ensures the ability of operational commands to test and develop effective Electronic Attack/Electronic Protection (EA/EP) and tactics. Funds are required for: deployment of blue systems to test facilities, travel for personnel to the test sites to evaluate and validate test results real-time, reimbursement for industrial-funded range and laboratory costs; costs for instrumentation of blue systems; contracted engineering support for the conduct of tests and subsequent reporting. Funding for this program is required to prevent future aircraft losses due to improper and inaccurate aircrew tactics (e.g., lack of evasive action or proper tactics training to avoid missile attack).</p> <p>(U) FY 1997 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$1,400 Funded fighter and bomber testing for foreign materiel operational exploitation. Extensive evaluations and reporting was accomplished.</li> <li>- (U) \$ 280 Funded transport aircraft for foreign materiel operational exploitation. Extensive evaluations and reporting was accomplished.</li> <li>- (U) \$ 44 Funded classified assessments for foreign materiel operational exploitation. Extensive evaluations and reporting was accomplished.</li> <li>- (U) \$1,724 Total</li> </ul> <p>(U) FY 1998 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$1,180 Funds fighter and bomber testing for foreign materiel operational exploitation. Extensive evaluations and reporting to be accomplished.</li> <li>- (U) \$ 250 Funds transport aircraft for foreign materiel operational exploitation. Extensive evaluations and reporting to be accomplished.</li> <li>- (U) \$ 41 Funds classified assessments for foreign materiel operational exploitation. Extensive evaluations and reporting was accomplished.</li> <li>- (U) \$1,471 Total</li> </ul> <p>(U) FY 1999 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$1,561 Funds fighter and bomber testing for foreign materiel operational exploitation. Extensive evaluations and reporting to be accomplished.</li> <li>- (U) \$ 300 Funds transport aircraft for foreign materiel operational exploitation. Extensive evaluations and reporting to be accomplished.</li> <li>- (U) \$ 63 Funds classified assessments for foreign materiel operational exploitation. Extensive evaluations and reporting was accomplished.</li> <li>- (U) \$1,924 Total</li> </ul>											

Project 2907

Page 9 of 15 Pages

Exhibit R-2 (PE 0604256F)

1113

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

## 0604256F Threat Simulator Development

PROJECT  
2907

**Total  
Cost  
Continuing**

<u>FY 1997</u>	1,795	1,795
----------------	-------	-------

(U) D. Schedule Profile: Not applicable.

Exhibit R-2 (PE 0604256F)

1114

**UNCLASSIFIED**

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT			
6 - Management and Support		0604256F Threat Simulator Development								7500			
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
7500	Foreign Materiel Acquisition/Exploitation	0	0	0	4,833	6,254	7,181	7,353	Continuing	TBD			

(U) **A. Mission Description and Budget Item Justification:** This project is established for the specific purpose of supporting the USAF Foreign Materiel Program in the acquisition and exploitation of foreign materiel. Items considered for these Foreign Materiel Acquisition and Exploitation (FMA&E) funds are included in the prioritized Air Force Foreign Materiel Acquisition (FMA) list established each year and are not eligible for OSD FMA&E funds. The USAF FMA list is established annually by Major Command representatives using specific criteria and a well-established process. The draft list is then approved by each Major Command and final approval comes from the Air Force Vice Chief of Staff. Exploitations are based on and driven by acquisitions.

**UNCLASSIFIED**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support  
0604256F Threat Simulator Development  
PROJECT  
6510

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
6510 Flight Test Resources	9,506	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification The AF requires a comprehensive set of test facilities to implement the Air Force Electronic Warfare (EW) Test Process. In order that program risk can be managed effectively throughout the weapon system acquisition process, and test and evaluation (T&E) be conducted effectively and efficiently, a spectrum of T&E capabilities from modeling and simulation through open-air ranges is required. The Advanced Airborne Interceptor Simulator (AAIS) project initiated development of an advanced signal system to represent airborne threats for EW open-air testing. In FY 98, Projects 6510, Flight Test Resources, and 2900, RATSCAT Upgrade, were combined into Project 3321, Electronic Warfare Ground Test Resources.

## (U) FY 1997 (\$ in Thousands):

- (U) \$5,800 Completed AAIS radar and communication equipment design.  
 - (U) \$2,606 Began AAIS radar and communication equipment fabrication  
 - (U) \$1,100 Began preparation for AAIS integration/testing phases.  
 - (U) \$9,506 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$0 Not applicable.

## (U) FY 1999 (\$ in Thousands):

- (U) \$0 Not applicable.

Project 6510

Page 12 of 15 Pages

Exhibit R-2 (PE 0604256F)

1116

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		<b>DATE</b>	<b>February 1998</b>
<b>BUDGET ACTIVITY</b>	<b>PE NUMBER AND TITLE</b>		
<b>6 - Management and Support</b>	<b>0604256F Threat Simulator Development</b>		
			<b>PROJECT</b>
			<b>6510</b>

(U) B. <u>Program Change Summary (\$ in Thousands)</u>									
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>					
(U) Previous President's Budget (FY 1998 PB)	10,836			N/A					
(U) Appropriated Value	10,836								
(U) Adjustments to Appropriated Value									
a. Cong Reductions	-454								
b. SBIR	-736								
c. Omnibus or Other Above Threshold Reprogram									
d. Below Threshold Reprogramming	-140								
e. Rescissions									
(U) Adjustments to Budget Years Since FY 1998 PB									
(U) Current Budget Submit/FY 1999 President's Budget	9,506			N/A					
(U) Change Summary Explanation:									
Funding: None.									
Schedule: None.									
Technical: None.									
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>									
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To Compl</u>	<u>Total Cost</u>
Appropriation: RDT&E	6,400							N/A	6,400
Budget Activity: Defense-Wide Mission Support, 6									
Program Title: Central Test and Evaluation Investment Program (CTEIP)									
(U) D. <u>Schedule Profile</u> : Not applicable									

Project 6510

Page 13 of 15 Pages

Exhibit R-2 (PE 0604256F)



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

## 0604256F Threat Simulator Development

2900

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2900 Radar Target Scatter (RATSCAT) Upgrade	1,871	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification This project provides improvements to the Radar Target Scatter (RATSCAT) facility in order to assure support to address radar cross section (RCS) measurement requirements of DoD customers. Key areas of improvement complement and support the existing stand-alone Central Test and Evaluation Improvement Program (CTEIP) funded program and include radar upgrades standardization of data processing equipment and techniques, bistatic testing, pylon background reduction, low frequency measurement capability upgrades, and efficiency related equipment. The DoD continues an aggressive R&D program to achieve low observable technology. This project provides a continuous effort to allow test technology to keep pace with these activities. In FY 98, Projects 6510, Flight Test Resources, and 2900, RATSCAT Upgrade, were combined into Project 3321, Electronic Warfare Ground Test Resources.

(U) FY 1997 (\$ in Thousands):

- (U) \$1,871 RATSCAT Upgrades. Completed procurement of DAPS for Mainsite. Continue design and procurement of BICOMS radar systems.  
- (U) \$1,871 Total

(U) FY 1998 (\$ in Thousands):

- (U) Not applicable.

(U) FY 1999 (\$ in Thousands):

- (U) Not applicable.

Project 2900

Page 14 of 15 Pages

Exhibit R-2 (PE 0604256F)

1118

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE						
6 - Management and Support	0604256F Threat Simulator Development						2900
<b>(U) B. Program Change Summary (\$ in Thousands)</b>							
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999	Total Cost Continuing			
(U) Appropriated Value	1,948						
(U) Adjustments to Appropriated Value	1,948						
a. Cong Reductions	-77						
b. SBIR							
c. Omnibus or Other Above Threshold Reprogram							
d. Below Threshold Reprogramming							
e. Rescissions							
(U) Adjustments to Budget Years Since FY 1998 PB							
(U) Current Budget Submit/FY 1999 President's Budget	1,871						
(U) Change Summary Explanation:							
Funding: None.							
Schedule: None.							
Technical: None.							
<b>(U) C. Other Program Funding Summary (\$ in Thousands)</b>							
<b>(U) D. Schedule Profile</b>							
	FY 1997	FY 1998	FY 1999				
1	2	3	4	1	2	3	4
(U) DAPS Procured	X						
(U) BICOMS Mobile Radar Procured	X						

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0604258F

UNCLASSIFIED

PE TITLE: Target Systems Development

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT
6 - Management and Support		0604258F Target Systems Development							February 1998	2459
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2459 Target Payloads		4,626	4,491	1,666	195	196	198	199	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**  
 Aerial Targets are used to determine air-to-air weapons effectiveness and mission proficiency of our tactical systems against enemy aircraft. The overall objective is to improve air-to-air weapons systems accuracy and reliability by developing improved aerial target systems for Air Force weapons system test and evaluation. Specialized target payload subsystems are developed for full-scale and subscale targets for missile scoring, electronic and infrared (IR) countermeasures, and radar and IR signature augmentation. An Interim Vector Scoring (IVS) system is being produced to provide missile path and position relative to the target at point of closest approach, essential to accurately calculate the probability of a kill. Electronic and infrared countermeasures being developed include chaff and flare dispenser systems. IR signature augmentation systems are developed for subscales to provide a signature representative of threat military jet engines. The Drone Radio Frequency (RF) Electronic Enhancement Mechanism (DREEM) is being developed to provide subscale radar cross section (RCS) enhancement to replicate full size threat aircraft, and will be used for Developmental Test and Evaluation/Initial Operational Test and Evaluation of air-to-air missiles, air-to-air Weapons System Evaluation Program (WSEP). This program also provided for the development of the QF-4E Full Scale Aerial Target. This program is in budget activity 6 - Management Support because it provides overall support to research and development activities.

**(U) Acquisition Strategy:**  
 The acquisition strategy is competitive, cost plus contracts.

**(U) FY 1997 (\$ in Thousands):**

-	(U)	\$16	IVS Contractor Support
-	(U)	\$33	IVS International Range Instrumentation Group (IRIG) Timing Card Upgrade
-	(U)	\$15	IVS Encryption Upgrade
-	(U)	\$30	BQM-34 NICAD Battery Development
-	(U)	\$1,785	Continued DREEM Demonstration/Validation (DEMVAL)
-	(U)	\$208	Continued MQM-107E Signal Processor Vehicle Interface/Digital Autopilot (SPV/DAP) Integrated Flight Controller (IFC) Development / Advanced Maneuvers
-	(U)	\$152	SPV/DAP Integrated Flight Controller (IFC) Software Development
-	(U)	\$467	Integrated POD Capabilities
-	(U)	\$ 5	Hardware/Software for Tech Order Writing

Project 2459

Page 1 of 4 Pages

Exhibit R-2 (PE 0604258F)

1121

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604258F Target Systems Development

2459

-	(U)	\$128	QF-106 Canceled Year Liability
-	(U)	\$35	Adapt MQM-107E to carry Electronic Countermeasures/Infra-red Countermeasures (ECM/IRCM) Payloads
-	(U)	\$200	Vector Doppler Scorer (VDOPS) Ground Standard Processor Upgrade
-	(U)	\$70	Non-linear Trajectory Upgrade
-	(U)	\$34	Gulf Range Drone Control Upgrade System (GRDCUS) Pod II Global Positioning System (GPS) Software Upgrade
-	(U)	\$120	AF Development Test Center (AFDTC/DR) - Target Requirements Support
-	(U)	\$76	Test and Acquisition Management Support (TAMS) - Test Support
-	(U)	\$50	Super MQM Demonstration
-	(U)	\$1	MQM-107D Water Recovery Demonstration
-	(U)	\$20	DREEM Development Test and Evaluation (DT&E)
-	(U)	\$1,181	Support & Management
-	(U)	\$4,626	Total

## (U) FY 1998 (\$ in Thousands):

-	(U)	\$2,113	Continue DEMVAL for DREEM
-	(U)	\$80	Continue to Adapt MQM-107E to carry ECM/IRCM Payloads
-	(U)	\$282	IFC Advanced Maneuver
-	(U)	\$188	DREEM Feasibility Study (Near Field)
-	(U)	\$188	AFDTC/DR - Target Requirements Support
-	(U)	\$1,170	Support & Management
-	(U)	\$94	TAMS Test Support
-	(U)	\$376	DREEM DT&E
-	(U)	\$4,491	Total

## (U) FY 1999 (\$ in Thousands):

-	(U)	\$200	Target Reliance Technical Support
-	(U)	\$120	DREEM Feasibility Study (Near Field)
-	(U)	\$1006	Support & Management
-	(U)	\$50	TAMS Test Support
-	(U)	\$290	DREEM DT&E
-	(U)	\$1,666	Total

Project 2459

Page 2 of 4 Pages

Exhibit R-2 (PE 0604258F)

1122

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

**0604258F Target Systems Development**

(U) B. Program Change Summary (\$ in Thousands)

(U) Change Summary Explanation:

FY99 decreased to fund higher Air Force priorities (-\$3,118K) and due to an inflation adjustment (-\$34K).

**Technical: None**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
(U) PE35116F: Appropriation: Missile Procurement, AF Budget Activity: 2 Program Title: Target Drones									
WSC: MQM107 (MQM-107E)	13,303	4,472	13,821	20,545	22,084	22,440	22,692	Cont	Cont
WSC: M04AQF (QF-4)	17,717	20,540	22,442	17,237	16,735	16,645	16,831	Cont	Cont
Spares: BOM-34, QF-4, MQM-107, QF-106	1,904	1,089	2,570	3,412	3,451	3,590	3,647	Cont	Cont

**Exhibit R-2 (PE 0604258F)**

**UNCLASSIFIED**

**UNCLASSIFIED**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

**0604258F Target Systems Development**

**PROJECT  
2459**

**(U) D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
1	2	1	2
1	3	4	3
4			4
4			1

**(U) Full-Scale Aerial Target Systems**

(U) QF-4

-IOC

**- First Delivery (Lot 2)**

- Production Options (Lot 3)

**- First Delivery (Lot 3)**

### - Follow-on QF-4 Production Options

**(U) Target Payloads**

(U) DREEM

- Contract Award 3/96

### - Factory Testing

### - Ground Testing

### - Flight Testing

Project 2459

Page 4 of 4 Pages

1124

**Exhibit R-2 (PE 0604258F)**

**UNCLASSIFIED**

PE NUMBER: 0604759F

UNCLASSIFIED

PE TITLE: Major Test And Evaluation Investment

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY										PE NUMBER AND TITLE	
6 - Management and Support										0604759F Major Test And Evaluation Investment	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		29,440	53,364	34,518	48,180	57,295	51,313	48,028	Continuing	TBD	
4597 (U) Air Force Test Investments		0	53,364	34,518	48,180	57,295	51,313	48,028	Continuing	TBD	
3120 Air Force Development Test Center		8,306	0	0	0	0	0	0	Continuing	TBD	
3285 Arnold Engineering Development Center		5,125	0	0	0	0	0	0	Continuing	TBD	
3620 Air Force Flight Test Center		16,009	0	0	0	0	0	0	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

This program element provides planning, improvements, and modernization for test capabilities at three Air Force Test Centers: Arnold Engineering Development Center (AEDC), Air Force Development Test Center (AFDTC), and Air Force Flight Test Center (AFFTC). The purpose is to help test centers keep pace with emerging weapon system technologies. Test investment activities are also funded at the Space and Missile Systems Center Test Directorate (SMC/TE) and the Joint Program Office (JPO) for Test and Evaluation (T&E). The fluctuations in the funding at these locations are due to changing priorities in the improvement and modernization requirements as defined through the AF Test Investment Planning & Programming. Also, all projects have been reviewed through the Tri-Service Reliance effort (to communicate AF efforts to the other services and avoid unwarranted duplication of effort) and are documented in the Test Capability Master Plans. Further, each project has its own planning, development, equipment acquisition/facility construction, equipment installation, and checkout phases which often requires significant differences in funding from one year to the next. As such, the changes in funding from year to year do not necessarily indicate program growth but rather a planned phasing of improvement and modernization efforts. The test capabilities at these centers enable testing through all phases of weapon system acquisition from system concept exploration through component and full scale integrated weapon system testing to operational testing. These three test centers have over \$10 billion worth of unique test facilities/capabilities. They are a national asset operated and maintained by the Air Force for DoD test and evaluation missions, but they are available to others having a requirement for their unique capabilities. Beginning in FY98, T&E investments are consolidated into one project (4597) to properly reflect that Air Force investments are determined at the component and DoD level. Prior to FY98, investments were reflected by test center and led to misperceptions that investment planning was geographically determined. This Program Element is in Budget Activity 6, Management and Support, because it is a Research and Development (R&D) effort for Improvement and Modernization of T&E capabilities at Air Force Test Centers.

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

## 0604759F Major Test And Evaluation Investment

## (U) Acquisition Strategy:

This program element uses several different contracting strategies to provide the most cost effective T&E investment solutions. The main acquisition strategy is to use full and open competition wherever possible to improve and modernize existing test capabilities.

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget (FY 1998 PB):	32,340	47,336	43,809	
(U) Appropriated Value	33,529	56,336		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-735	-2,197		
b. SBIR	-454	-775		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-2,900			
(U) Adjustments to Budget Years Since FY 1998 PB			-9,291	
(U) Current Budget Submit/FY 1999 President's Budget	29,440	53,364	34,518	Continuing

## (U) Change Summary Explanation:

Funding: FY 99: Program content reduced or slipped due to budget constraints.

Schedule: In some cases program(s) was delayed from three months to one year.

Technical: None.

(U) C. Other Program Funding Summary (\$ in Thousands)

## Related RDT&amp;E:

(U) PE 0604940D, Central Test & Evaluation Improvement Program

(U) PE 0604256F, Threat Simulator Development

(U) PE 0604735F, Combat Training Ranges

(U) D. Schedule Profile: This PE contains multiple schedule profiles which are available upon request.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604759F Major Test And Evaluation Investment

4597

COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4597 (U) Air Force Test Investments	0	53,364	34,518	48,180	57,295	51,313	48,028	Continuing	TBD

(U) A. Mission Description and Budget Item Justification AFDTC, located at Elgin AFB, FL, conducts and supports developmental test and evaluation and operational test and evaluation of non-nuclear air armaments, C<sup>4</sup>I systems, and target acquisition and weapon delivery systems; provides a climatic simulation capability; and determines target/test item spectral signatures. The Guided Weapon Evaluation Facility (GWEF) provides a full spectrum, multifunctional seeker/sensor laboratory test capability for all guided weapons. Common Airborne Instrumentation System (CAIS) Integration provides standardized airborne test instrumentation to enhance interoperability and commonality. Global Positioning System (GPS) Range Systems will provide a major improvement for Time-Space-Position-Information (TSPI) at all Major Range and Test Facility Bases (MRTFB) and specifically at the Eglin Ranges for munitions testing. Command, Control, Communications, Computers and Intelligence (C<sup>4</sup>I) Test Capabilities Upgrade will provide connectivity to existing capabilities and add needed networks and hardware to develop a C<sup>4</sup>I test bed. The Preflight Integration of Munitions and Electronic Systems (PRIMES) facility conducts preflight test and evaluation of total integrated weapon systems in a secure anechoic chamber. The Armament Systems Test Environment (ASTE) Range Systems effort upgrades instrumentation of the major data collection systems supporting open air testing. The Climatic Test Facility modernization of instrumentation and environmental capabilities supports the military construction upgrade, extending its useful life to 2015. Mission Control/Data Analysis provides for real-time central mission control and analysis. Multispectral Missile Engagement Hardware-in-the-Loop (HITL) Test provides a capability to support multiple and wide field-of-view missile engagements incorporating multispectral simulations. The Santa Rosa Island Reconstitution effort will provide hardware-in-the-loop equipment for three focus sites to support armament/munitions and C4I testing. These projects ensure test center technology is compatible with weapon systems to be tested such as AMRAAM, JDAM, AGM-130, ASRAAM, JTIDS, JSTARS, Combat Talon, etc.

AEDC, located at Arnold AFB, TN, provides ground environmental test support for DoD aeronautical, missile, and space programs. The center has 53 test facilities providing: aerodynamic testing of scale model aircraft, missile, and space systems; testing of large and full-scale satellites, sensors, and space vehicles in a simulated space environment; altitude environmental testing for aircraft, missile, and spacecraft propulsion systems; and testing of large-scale models such as space boosters together with their propulsion systems. The AEDC Data Acquisition and Processing System (DAPS) provides processing capability for advanced turbine engine testing on programs like the F-22. This effort also upgrades data systems for the arc heaters and hypervelocity gun facility for Theater High Altitude Air Defense (THAAD) testing. Inefficiencies in these current data systems result in increased program costs and schedule delays. The Computer Aided Modernization Project (CMP) will provide increased capability for data processing and storage and provide wider availability of workstations. The Propulsion Wind Tunnel (PWT) Sustainment project sustains long-term operation of tunnels 16T and 16S to meet transonic/supersonic test needs. The Improve Turbine Engine Structural Integrity project will provide new state-of-the-art structural test monitoring and data analysis systems to support turbine engine structural tests to detect and analyze high cycle fatigue.

Project 4597

Page 3 of 14 Pages

Exhibit R-2 (PE 0604759F)

1127

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604759F Major Test And Evaluation Investment

4597

AFTTC, located at Edwards AFB, CA conducts and supports developmental test and evaluation and operational test and evaluation of aircraft and aircraft systems, aerospace research vehicles, unmanned miniature vehicles, cruise missiles, parachutes delivery/recovery systems, and cargo-handling systems. The AF Common Airborne Instrumentation System (CAIS) Integration & Support (I&S) supports DoD objectives for interoperability/commonality. The goal of CAIS I&S is to integrate CAIS equipment and supporting instrumentation equipment and systems to provide a full airborne instrumentation operational capability. The Advanced Data Acquisition and Processing Systems (ADAPS) project provides an integrated capability to satisfy real-time first generation post-test data processing, archival, and display requirements of the next decade. The developmental approach is directed towards providing a high degree of interoperability between systems and components by adherence to Air Force and DoD guidelines. The technologies being developed under ADAPS have the potential to satisfy data processing and display needs at various multi-service test ranges. The Space Based Data Relay (SBDRL) project provides the capability for Advanced Range Instrumentation Aircraft (ARIA) to fulfill customer needs for real time, high-speed data, and greatly improve the overall range data relay capability. The Flight Simulator Modernization project will upgrade the Test and Evaluation Modeling and Simulation (TEMS) facility to meet future man-in-the loop simulator requirements. The Linked Interactive T&E Networking (LITENING) project will provide the network infrastructure necessary to support inter-range simulations and support the efficient transmission of flight test data to various facilities for processing and analysis.

SMC/TE located at Kirtland AFB, NM is responsible for test planning and implementation for all space and ballistic missile systems. The Combined Space Test Task Force project will provide the capability to develop and test new satellites and ground control systems.

Beginning in FY98, T&E investments are consolidated into one project (4597) to properly reflect that Air Force investments are determined at the component and DoD level. Prior to FY98 investments were reflected by test center and led to misperceptions that investment planning was geographically determined.

(U) Acquisition Strategy:

This program element uses several different contracting strategies to provide the most cost effective T&E investment solutions. The main acquisition strategy is to use full and open competition wherever possible to improve and modernize existing test capabilities.

(U) FY 1997 (\$ in Thousands):

- (U) \$0 Not applicable.

(U) FY 1998 (\$ in Thousands):

**Air Force Development Test Center (AFDTC)**

- (U) \$4,924 Continue CAIS integration, procure CAIS production units, and continue procurement of support equipment.

- (U) \$1,854 C<sup>4</sup>I Test Capabilities Upgrade. Continue the acquisition of workstations, network connections, and processing hardware/software. Begin secure facility upgrades.

- (U) \$3,484 GWEF. Continue development of the expanded radar simulator and the midwave infrared (IR) simulator. Begin aircraft/munitions modeling and simulation.

- (U) \$1,123 Continue GPS integration on the range and Central Control Facility. Begin acquisition of a translator/processor system.

- (U) \$1,643 PRIMES. Acquire a Communication-Navagation-Identification(CNI) simulator, upgrade the GPS simulator and begin the munitions interface simulations.

- (U) \$1,371 ASTE Range Systems. Begin upgrades to TSPI systems, timing, telemetry, microwave, communications, arenas, gun test, photo-optics, and fiber optics.

Project 4597

Page 4 of 14 Pages

Exhibit R-2 (PE 0604759F)

1128

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604759F Major Test And Evaluation Investment

4597

- (U)	\$9,300	Santa Rosa Island Reconstitution. Begin development of three focus sites to provide open air Hardware-in-the-Loop (HITL) capability.
-		<b>Arnold Engineering Development Center (AEDC)</b>
- (U)	\$2,440	Continue AEDC DAPS with acquisition and installation of additional workstations/processors in engine test cells. IOC of C1/C2 test cells.
- (U)	\$1,263	Continue purchase of CMP workstations (design fourth increment). Continue to implement the AEDC Reengineering Computer Base.
- (U)	\$8,270	Begin PWT Sustainment projects. Begin design and procurement of PWT data acquisition and processing systems. Start requirements planning for flow quality and electric motor repower improvements.
- (U)	\$1,890	Begin Hypersonic Wind Tunnel Design Study. Issue study contracts for requirements definition and program planning.
-		<b>Air Force Flight Test Center (AFFTC)</b>
- (U)	\$6,087	CAIS I&S development. Purchase CAIS components for AFFTC use. Continue TMS development with automated setup of systems, automated diagnostics, and simulation capability. Begin development of an on-board processing capability.
- (U)	\$3,346	ARIA Space Based Data Relay. Complete the communications portion of the SBDP program for 3 aircraft. Continue hardware/software integration of the SBDP subsystems upgrades for a 3 aircraft fleet.
- (U)	\$6,034	Continue integration of ADAPS with ground test simulation capabilities. Begin marketing capabilities to support multiple flight test missions including Tri-Service Operational flight tests. Develop capability to increase test data flow throughput and decrease flight test mission turnaround time. IOC of AFFTC Post Test Analysis System and Auxiliary Processing and Analysis System.
-		<b>Other Projects</b>
- (U)	\$ 335	Continue Joint Program Office T&E support activities.
- (U)	\$53,364	Total
(U)		<b>FY 1999 (\$ in Thousands):</b>
-		<b>Air Force Development Test Center</b>
- (U)	\$2,254	Continue CAIS integration, procure CAIS production units, and continue procurement of support equipment.
- (U)	\$ 724	C <sup>4</sup> I Test Capabilities Upgrade. Continue the acquisition of workstations, network connections, and processing hardware/software. Complete secure facility upgrades.
- (U)	\$2,553	GWEEF will complete the expanded radar simulator and midwave IR simulator. Begin development of the multispectral man-in-the-loop and the active laser simulator. Continue aircraft/munitions modeling and simulation.
- (U)	\$2,228	Continue GPS integration and complete the acquisition of translator/processor system.
- (U)	\$1,656	PRIMES. Begin the aircraft/munitions interface simulations. Complete the CNI simulator data link and acquire an F-15/APG 63-V1 radar interface.
- (U)	\$1,789	ASTE Range Systems. Continue upgrades to TSPI systems, telemetry, microwave, communications, arenas, gun test, and photo-optics.
- (U)	\$1,053	Mission Control/Data Analysis. Begin procurement of data acquisition equipment and real-time TM equipment.

Project 4597

Page 5 of 14 Pages

Exhibit R-2 (PE 0604759F)

1129

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0604759F Major Test And Evaluation Investment	4597	
- (U) \$1,972	The Multispectral Missile Engagement HTTL Test Capacity. Begin acquisition of a target generator and development of target and clutter models.		
- (U) \$1,084	Arnold Engineering Development Center		
- (U) \$1,078	AEDC DAPS. Complete installation of the J4 rocket test cell DAPS. IOC of J1/J2 test cell portion of DAPS.		
- (U) \$4,560	Continue purchase of CMP workstations. Continue to implement the AEDC Reengineering Computer Base.		
- (U) \$ 871	PWT Sustainment. Continue installation of data acquisition and processing system in 16T and 16S tunnels. Continue installation of 16T/16S pre-test checkout system. Begin design of plant control systems. Continue planning for flow quality and electric motor repower improvements.		
- (U) \$ 871	Improve Turbine Engine Structural Integrity. Begin design and procurement of aeromechanical test hardware and development of data analysis techniques.		
- (U) \$3,820	Air Force Flight Test Center		
- (U) \$5,541	CAIS I&S development. Finish rehost of Test Instrumentation Management System (TIMS) to Windows NT platform and improve TIMS with automated setup of systems, automated diagnostics, and simulation capability. Continue development of an on-board processing capability. Begin development of an advanced solid state recorder.		
- (U) \$1,225	ADAPS. Continue to integrate simulation system with real-time data analysis capability. Begin development of desktop simulation capability. Continue to provide the traditional structures & flutter post-test analysis capability in near real-time in the Ridley Mission Control Rooms. Continue to provide post test analysis capabilities for flight testing. Provide avionics data processing in near real-time in the Ridley Mission Control Rooms. Finish real-time development.		
- (U) \$ 780	Flight Simulation Modernization. Begin the upgrade of the Test and Evaluation Modeling and Simulation (TEMS) facility to meet future man-in-the-loop simulator requirements for programs such as the Joint Strike Fighter (JSF). Procure hardware to support the development of a reconfigurable Air Warfare Mission Simulator (AWMS) cockpit simulator.		
- (U) \$ 350	Linked Interactive T&E Networking. Begin development of AFFTC high-speed network to link test capabilities such as Electronic Combat Integrated Test (ECIT). Develop connectivity to the Defense Research Engineering Network (DREN).		
- (U) \$ 980	Other Projects		
- (U) \$34,518	Continue Joint Project Office T&E support activities.		
- (U) \$ 980	Combined Space Test Task Force. Begin procurement of hardware and software to complete evaluations of on-orbit R&D satellites and technologies. Begin development of a satellite command and control database and models.		
- (U) \$34,518	Total		

Project 4597

Page 6 of 14 Pages

Exhibit R-2 (PE 0604759F)

Project 4597

Page 6 of 14 Pages

Exhibit R-2 (PE 0604759F)

1130

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604759F Major Test And Evaluation Investment

4597

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Cont
(U) Previous President's Budget (FY 1998 PB):				
(U) Appropriated Value	0	47,336	43,809	
(U) Adjustments to Appropriated Value		56,336		
a. Cong Reductions		-2,197		
b. SBIR		-775		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Years Since FY 1998 PB			-9,291	
(U) Current Budget Submit/FY 1999 President's Budget	0	53,364	34,518	Cont

## (U) Change Summary Explanation:

Funding:

Funding: FY 99:

Climatic Test Facility upgrade cancellation -797

Advanced Range Instrumentation Aircraft Space-based Data Relay/Recording and Timing System Upgrade cancellation -1,731

Common Airborne Instrumentation System (reduced quantity) -1,376

Guided Weapon Evaluation Facility (delayed instrumentation upgrade one year) - 631

C4I Test Capability Upgrade (delayed instrumentation development) -1,215

Computer-aided modification program (delayed development one year) - 911

Improved Turbine Engine Structural Integrity -1,521

Miscellaneous T&E reductions to thirteen other T&E investment programs -1,109

Schedule: Each affected program was delayed from three months to one year.

Technical: None.

Project 4597

Page 7 of 14 Pages

Exhibit R-2 (PE 0604759F)

1131

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0604759F Major Test And Evaluation Investment	4597	
<p>(U) C. <u>Other Program Funding Summary (\$ in Thousands):</u> None</p> <p>Related RDT&amp;E:</p> <p>(U) PE 0604256F, Threat Simulator Development</p> <p>(U) PE 0604940D, Central Test and Evaluation Investment Program</p> <p>(U) D. <u>Schedule Profile:</u> This PE contains multiple schedule profiles which are available upon request.</p>			

Project 4597

Page 8 of 14 Pages

Exhibit R-2 (PE 0604759F)

1132

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604759F Major Test And Evaluation Investment

3120

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3120 Air Force Development Test Center		8,306	0	0	0	0	0	0	Continuing	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification: AFDTC, located at Elgin AFB, FL, conducts and supports developmental test and evaluation and operational test and evaluation of non-nuclear air armaments, C<sup>4</sup>I systems, and target acquisition and weapon delivery systems; provides a climatic simulation capability; and determines target/test item spectral signatures. The Guided Weapon Evaluation Facility (GWEF) provides a full spectrum, multifunctional seeker/sensor laboratory test capability for all guided weapons. Common Airborne Instrumentation System (CAIS) Integration provides standardized airborne test to enhance interoperability and commonality. GPS Range Systems will provide a major improvement for Time-Space-Position-Information (TSPI) at all MRTFBs and specifically at the Elgin Ranges for munitions testing. Command, Control, Communications, Computers and Intelligence (C<sup>4</sup>I) Test Capabilities Upgrade will provide connectivity to existing capabilities and add needed networks and hardware to develop a C<sup>4</sup>I test bed. These projects ensure test center technology is compatible with weapon systems to be tested such as AMRAAM, JDAM, AGM-130, ASRAAM, JTIDS, JSTARS, Combat Talon, etc.

## (U) FY 1997 (\$ in Thousands):

- (U) \$2,505 Continued CAIS integration, procure CAIS production units, and continue procurement of support equipment for bench, laboratory, and preflight.  
 - (U) \$1,410 C<sup>4</sup>I Test Capabilities Upgrade. Began procurement of workstations, network connections, and hardware/software for a classified C<sup>4</sup>I test capability.  
 - (U) \$2,965 GWEF. Completed the multimode project and continued the expanded radar simulator.  
 - (U) \$1,426 Continued procurement of GPS instrumentation for surface and airborne TSPI.  
 - (U) \$8,306 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$0 Not applicable.

## (U) FY 1999 (\$ in Thousands):

- (U) \$0 Not applicable.

Project 3120

Page 9 of 14 Pages

Exhibit R-2 (PE 0604759F)

1133

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0604759F Major Test And Evaluation Investment	3120	
(U) B. <u>Program Change Summary (\$ in Thousands)</u>			
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	9,206	0	0
(U) Adjustments to Appropriated Value	9,405		
a. Cong Reductions	-199		
b. SBIR			
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	-900		
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit: FY 1999 PB	8,306	0	0
(U) Change Summary Explanation:			Continuing
Funding: None.			
Schedule: None.			
Technical: None.			
(U) C. <u>Other Program Funding Summary (\$ in Thousands):</u> None			
(U) D. <u>Schedule Profile:</u> This PE contains multiple schedule profiles which are available upon request.			

Project 3120

Page 10 of 14 Pages

Exhibit R-2 (PE 0604759F)

1134

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0604759F Major Test And Evaluation Investment

3285

COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3285 Arnold Engineering Development Center	5,125	0	0	0	0	0	0	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description and Budget Item Justification** AEDC, Arnold AFB, TN, provides ground environmental test support for DoD aeronautical, missile, and space programs. The center has 53 test facilities providing: aerodynamic testing of scale model aircraft, missile, and space systems; testing of large and full-scale satellites, sensors, and space vehicles in a simulated space environment; altitude environmental testing for aircraft, missile, and spacecraft propulsion systems; and testing of large-scale models such as space boosters together with their propulsion systems. The AEDC Data Acquisition and Processing System (DAPS) provides processing capability for advanced turbine engine testing on programs like the F-22. This effort also upgrades data systems for the arc heaters and hypervelocity gun facility for Theater High Altitude Air Defense (THAAD) testing. Inefficiencies in these current data systems result in increased program costs and schedule delays. The Computer Aided Modernization Project (CMP) will provide increased capability for data processing and storage and provide wider availability of workstations. The Fighter Engine Test Capability will upgrade turbine engine test cells to accommodate higher thrust engines, and upgrade J-2 test cell with Exhaust Gas Management System for axisymmetric vectored exhaust nozzles.

## (U) FY 1997 (\$ in Thousands):

- (U) \$3,583 Continued AEDC DAPS with acquisition and installation of additional work stations/processors in the engine test cells. IOC ASTF and J4 rocket test cell portions of DAPS.

- (U) \$1,304 Continued purchase of CMP workstations (design third increment). Continued training of personnel.

- (U) \$ 238 Completed fighter engine test capability upgrade.

- (U) \$5,125 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$0 Not applicable.

## (U) FY 1999 (\$ in Thousands):

- (U) \$0 Not applicable.

Project 3285

Page 11 of 14 Pages

Exhibit R-2 (PE 0604759F)

1135

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0604759F Major Test And Evaluation Investment	3285	
(U) B. Program Change Summary (\$ in Thousands)			
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	5,626	0	0
(U) Adjustments to Appropriated Value	5,745		
a. Cong Reductions	-120		
b. SBIR			
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	-500		
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 1999 President's Budget	5,125	0	0
(U) Change Summary Explanation:			
Funding: None.			
Schedule: None.			
Technical: None.			
(U) C. Other Program Funding Summary (\$ in Thousands)			
(U) D. Schedule Profile: N/A			
Total Cost Continuing			

Project 3285

Page 12 of 14 Pages

Exhibit R-2 (PE 0604759F)

1136

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support

0604759F Major Test And Evaluation Investment

PROJECT

3620

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3620 Air Force Flight Test Center	16,009	0	0	0	0	0	0	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description and Budget Item Justification** AFFTC, located at Edwards AFB, conducts and supports developmental test and evaluation and operational test and evaluation of aircraft and aircraft systems, aerospace research vehicles, unmanned miniature vehicles, cruise missiles, parachutes delivery/recovery systems, and cargo-handling systems. The AF Common Airborne Instrumentation System (CAIS) Integration & Support (I&S) supports DoD objectives for interoperability/commonality. The goal of CAIS I&S is to integrate CAIS equipment and supporting instrumentation equipment and systems to provide a full airborne instrumentation operational capability. The Advanced Data Acquisition and Processing Systems (ADAPS) project provides an integrated capability to satisfy real-time first generation post-test data processing, archival, and display requirements of the next decade. The developmental approach is directed towards providing a high degree of interoperability between systems and components by adherence to Air Force and DoD guidelines. The technologies being developed under ADAPS have the potential to satisfy data processing and display needs at various multi-service test ranges. The AF Global Positioning System Range Applications Joint Program Office (GPS RAJPO) Equipment project provides funding for the purchase of production GPS equipment developed by the RAJPO (OSD funded) for tri-service application. The Space Based Data Relay (SBDR) project provides the capability for ARIA to fulfill customer needs for real time, high-speed data, and greatly improve the overall range data relay capability. The ARIA Extended S-Band Telemetry upgrade ensures the compatibility of the ARIA with the Expendable Launch Vehicles (ELV) and major DoD ranges.

(U) FY 1997 (\$ in Thousands):

- (U) \$5,941 Continued ARIA Space Based Data Relay program. Continued equipment installation/fabrication and #2 aircraft modification.
- (U) \$3,210 Continued CAIS I&S development. Purchased CAIS components for AFFTC use. Continued TIMS development with automated setup of systems, automated diagnostics, and simulation capability. Began development of a CAIS optical bus interface unit.
- (U) \$ 880 Completed purchase of RAJPO GPS equipment.
- (U) \$5,329 IOC of ADAPS Real-Time /Post-Flight Processing (RT/PPF). Conducted user, operator, & maintenance training. Continued development of the AFFTC Post Test Analysis System (APTAS) and the Auxiliary Processing and Analysis System (APAS). Began GTI requirements studies and analysis.
- (U) \$ 649 Completed the ARIA Extended S-Band equipment installation and modification project.
- (U) \$16,009 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$0 Not applicable.

Project 3620

Page 13 of 14 Pages

Exhibit R-2 (PE 0604759F)

1137

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE	
<b>6 - Management and Support</b>		<b>0604759F Major Test And Evaluation Investment</b>	<b>February 1998</b>
(U) FY 1999 (\$ in Thousands):			
-	(U) \$0	Not applicable.	
<b>(U) B. Program Change Summary (\$ in Thousands)</b>			
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	17,509	0	0
(U) Adjustments to Appropriated Value	18,379		
a. Cong Reductions	-416		
b. SBIR	-454		
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	-1500		
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 1999 President's Budget	16,009	0	0
(U) Change Summary Explanation:			
Funding: None.			
Schedule: None.			
Technical: None.			
<b>(U) C. Other Program Funding Summary (\$ in Thousands): None</b>			
<b>(U) D. Schedule Profile: N/A</b>			

Project 3620

Page 14 of 14 Pages

Exhibit R-2 (PE 0604759F)

1138

UNCLASSIFIED

**UNCLASSIFIED**

DATE \_\_\_\_\_

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
1110	Project Air Force	21,236	18,370	21,168	20,934	20,680	20,947	21,415	Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

This program provides for continuing analytical research across a broad spectrum of aerospace issues and concerns. The Project AIR FORCE (PAF) research agenda is focused primarily on mid- to long-term problems; in addition, PAF provides quick response assistance for senior Air Force officials on high priority, near term issues. Results and analytical findings directly impact senior management deliberations on major issues. The Air Force Steering Group, chaired by the Vice Chief of Staff, reviews, monitors, and approves PAF annual research efforts. Each project is initiated, processed, and approved IAW PAF Sponsoring Agreement which requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis.

(U) PAF is organized in four primary research program areas. The principle focus of PAF research is the transition of the Air Force to the 21st Century: to provide for the projection of air and space power across the spectrum of conflict in an era of declining budgets, personnel and force structure. These programs address organizational cross-cutting issues encompassing the future security environment, strategy, doctrine, force development and force application, operational sustainment, applications of new technology, advances in modeling, simulation and analytical methods, resource management and system acquisition policies and processes.

(U) In FY 97, principal research efforts included studies on Chinese defense modernization and the USAF, air and space power in the service of national security in the 21st century, terrorism and counter-terrorism: implications for strategy and USAF planning, integrating USAF space operations, implications of unmanned air vehicles for the future shape of the Air Force, enhancing the effectiveness of air expeditionary forces, investment strategy for information operations, implementation of lean logistics, improved access to private sources of support, enhanced use of the commercial industrial base, and improved ways of measuring and forecasting air force readiness. Two major integrative efforts included assessing USAF roles in a joint context as support for USAF participation in the Quadrennial Defense Review (QDR) and analysis of the impact of specific force structure options considered by the Deep Attack Weapons Mix Study (DAWMS) on U.S. air superiority capability.

(U) During FY98 and FY99, research undertaken by Project AIR FORCE (PAF) will be driven by specific focus areas developed through the USAF long-range planning process, QDR / NDP (national defense panel) initiatives, and enduring areas of concern to USAF leadership. The research agenda is being designed to drive a specific 2-year, FY98/99, strategy. This 2-year strategy will establish major research activities in support of themes which focus on major external challenges and opportunities affecting USAF operations; institutionalization of the USAF vision and long range planning within doctrine, concepts and plans; integration of air and space operations; power projection forces; and, force mix and infrastructure.

(U) PAF research spans functional and organizational boundaries and is managed in a manner to facilitate independence and freedom from organizational bias providing perspectives and deliberative thought to senior Air Force leaders which may otherwise reflect parochial spins not necessarily in the best interest of the Air Force at large. As a result, the research conducted relates to a wide spectrum of Air Force activities and emerging issues.

Project 1110

Page 1 of 3 Pages

Exhibit R-2 (PE 0605101F)

1139

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT															
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	1110															
<b>6 - Management and Support</b>																		
<p>(U) Benefits of independent non-Department of Defense analysis of complex present day and emerging issues are enjoyed beyond the immediacy of the Air Force. PAF study results are given wide dissemination within the DOD on a routine basis and deposited with the Defense Technical Information Center available to a broad range of qualified government and commercial individuals and activities. This program is in budget activity 6 - Management and Support, because it funds RAND Project AIR FORCE (PAF), the only Air Force Federally Funded Research and Development Center for studies and analyses.</p>																		
<p>(U) <b>Acquisition Strategy:</b> The RAND Project Air Force contract is a 5 year (base + 4 option yrs) Cost Plus / Award Fee contract</p>																		
<p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <table> <tr> <td>(U)</td> <td>\$4,000</td> <td>Strategy and Doctrine</td> </tr> <tr> <td>(U)</td> <td>\$6,400</td> <td>Force Employment and Modernization</td> </tr> <tr> <td>(U)</td> <td>\$6,636</td> <td>Resource Management and Systems Acquisition</td> </tr> <tr> <td>(U)</td> <td>\$4,200</td> <td>Integrative Research / Direct Support</td> </tr> <tr> <td>(U)</td> <td>\$21,236</td> <td>Total</td> </tr> </table>				(U)	\$4,000	Strategy and Doctrine	(U)	\$6,400	Force Employment and Modernization	(U)	\$6,636	Resource Management and Systems Acquisition	(U)	\$4,200	Integrative Research / Direct Support	(U)	\$21,236	Total
(U)	\$4,000	Strategy and Doctrine																
(U)	\$6,400	Force Employment and Modernization																
(U)	\$6,636	Resource Management and Systems Acquisition																
(U)	\$4,200	Integrative Research / Direct Support																
(U)	\$21,236	Total																
<p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <table> <tr> <td>(U)</td> <td>\$4,100</td> <td>Strategy and Doctrine</td> </tr> <tr> <td>(U)</td> <td>\$6,400</td> <td>Force Employment and Modernization</td> </tr> <tr> <td>(U)</td> <td>\$5,770</td> <td>Resource Management and Systems Acquisition</td> </tr> <tr> <td>(U)</td> <td>\$2,100</td> <td>Integrative Research / Direct Support</td> </tr> <tr> <td>(U)</td> <td>\$18,370</td> <td>Total</td> </tr> </table>				(U)	\$4,100	Strategy and Doctrine	(U)	\$6,400	Force Employment and Modernization	(U)	\$5,770	Resource Management and Systems Acquisition	(U)	\$2,100	Integrative Research / Direct Support	(U)	\$18,370	Total
(U)	\$4,100	Strategy and Doctrine																
(U)	\$6,400	Force Employment and Modernization																
(U)	\$5,770	Resource Management and Systems Acquisition																
(U)	\$2,100	Integrative Research / Direct Support																
(U)	\$18,370	Total																
<p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <table> <tr> <td>(U)</td> <td>\$4,800</td> <td>Strategy and Doctrine</td> </tr> <tr> <td>(U)</td> <td>\$6,800</td> <td>Force Employment and Modernization</td> </tr> <tr> <td>(U)</td> <td>\$6,568</td> <td>Resource Management and Systems Acquisition</td> </tr> <tr> <td>(U)</td> <td>\$3,000</td> <td>Integrative Research / Direct Support</td> </tr> <tr> <td>(U)</td> <td>\$21,168</td> <td>Total</td> </tr> </table>				(U)	\$4,800	Strategy and Doctrine	(U)	\$6,800	Force Employment and Modernization	(U)	\$6,568	Resource Management and Systems Acquisition	(U)	\$3,000	Integrative Research / Direct Support	(U)	\$21,168	Total
(U)	\$4,800	Strategy and Doctrine																
(U)	\$6,800	Force Employment and Modernization																
(U)	\$6,568	Resource Management and Systems Acquisition																
(U)	\$3,000	Integrative Research / Direct Support																
(U)	\$21,168	Total																

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support 0605101F RAND Project Air Force

PROJECT

1110

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget FY1998 PB	21,061	21,768	21,594	
(U) Appropriated Value	23,292	21,768		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-1,655	-3,398		
b. SBIR	-576			
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	175			
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-426	
(U) Current Budget Submit/FY 1999 President's Budget	21,236	18,370	21,168	Continuing

## (U) Change Summary Explanation (Funding):

- FY97 increase: \$175K BTR to fund RAND support to a USAF Infrastructure analysis project
- FY99 reprogrammed \$426K to fund higher priorities

(U) C. Other Program Funding Summary (\$ in Thousands) Not Applicable(U) D. Schedule Profile

	FY1997			FY1998			FY1999		
	1	2	3	4	1	2	3	4	
(U) Approve FY97 Research Plan	X								
(U) Draft FY98/99 Research Plan				X					
(U) Approve FY98/99 Research Plan				X					
(U) Annual Evaluation - FY97									
(U) Adjust FY99 Research Plan									
(U) Annual Evaluation - FY98									
(U) Draft FY00 Research Plan									
(U) Approve FY00 Research Plan									

Project 1110

Page 3 of 3 Pages

Exhibit R-2 (PE 0605101F)

1141

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0605306F

UNCLASSIFIED

PE TITLE: Ranch Hand II Epidemiology Study

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605306F Ranch Hand II Epidemiology Study								2767	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2767	Ranch Hand II Epidemiology Study	8,827	10,285	4,408	4,527	4,570	11,592	11,175	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) A. Mission Description and Budget Item Justification: This RDT&E Management Support program was directed in 1980 by the Assistant to the President of the United States for Domestic Affairs and Policy upon the recommendation of the Interagency Working Group on the Possible Long-Term Effects of Phenoxy Herbicides and Contaminants. As a result of this Presidential direction, PE 0605306F was established to conduct a 20-year epidemiology investigation of approximately 1,200 Air Force personnel who were involved with aerial spraying of herbicides in Vietnam from 1962 to 1971 (Operation Ranch Hand). The objective of this investigation is to determine whether long-term health effects exist and can be attributed to occupational exposure to phenoxy herbicides and their associated dioxins. Dioxin is an unwanted by-product from manufacturing Herbicide Orange.

This project involves a 20-year study that compares United States Air Force (USAF) Ranch Hand personnel to other USAF crew members and support personnel who were not exposed to herbicides while serving in Vietnam. Approximately 2,200 individuals (exposed personnel group plus control group) are participating in the study. Analyses of yearly mortality rates and the past and present health status of the study population were begun in 1982 with follow-up health examination schedules at the 3-, 5-, 10-, 15-, and 20-year time periods. The study includes examination of the possible occurrence of birth defects in children as determined from children's medical records and family medical histories.

(U) FY 1997 (\$ in Thousands):

- (U) \$6,196	Initiated fifth cycle of physical examinations, questionnaires, and participant data base; 1,078 examinations completed.
- (U) \$ 241	Conducted assays and data searches in support of ongoing epidemiologic study.
- (U) \$2,390	Processed and documented examination data.
- (U)	Began initial archiving of previous cycles' examination data and digitized the 1997 data as received.
- (U)	Conducted medical records coding and initiated verification of examination data base.
- (U)	Performed annual mortality analysis.
- (U) \$8,827	Total

Project 2767

Page 1 of 3 Pages

Exhibit R-2 (PE 0605306F)

1143

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605306F Ranch Hand II Epidemiology Study	2767	
(U) FY 1998 (\$ in Thousands):			
- (U) \$7,732	Complete fifth cycle of physical examinations, questionnaires, and participant data base.		
- (U) \$ 376	Analyze laboratory specimens and conduct statistical research studies.		
	- (U) Conduct serum dioxin assay.		
	- (U) Analyze fat biopsies.		
- (U) \$2,177	- (U) Produce mathematical model to integrate mortality and morbidity data for analyses.		
	Process and document examination data.		
	- (U) Continue to verify physical examination data base.		
	- (U) Accelerate archiving previous cycles' examination data and digitize the 1998 data as received.		
	- (U) Conduct medical records coding.		
	- (U) Perform annual mortality analysis.		
	- (U) Conduct data analysis for journals and reports.		
- (U) \$10,285	Total		
(U) FY 1999 (\$ in Thousands):			
- (U) \$1,339	Complete examination data base and conduct statistical analyses of examination data.		
- (U) \$ 561	Analyze laboratory specimens and conduct statistical research studies.		
	- (U) Conduct serum dioxin assays.		
	- (U) Complete analyses of fat biopsies.		
- (U) \$2,508	- (U) Complete mathematical model to integrate mortality and morbidity data for analyses.		
	Process and document examination data.		
	- (U) Update participant data base.		
	- (U) Continue archiving of examination data.		
	- (U) Conduct medical records coding.		
	- (U) Perform annual mortality analysis.		
	- (U) Conduct data analysis for journals and reports.		
- (U) \$4,408	Total		

Project 2767

Page 2 of 3 Pages

Exhibit B-2 (PE 0605306F)

Project 2767

Page 2 of 3 Pages

Exhibit R-2 (PE 0605306F)

1144

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605306F Ranch Hand II Epidemiology Study

2767

(U) B. Program Change Summary (\$ in Thousands):

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional/General Reductions

b. SBIR

c. Omnibus/Other Above Threshold Reprogrammings

d. Below Threshold Reprogrammings

e. Rescissions

(U) Adjustments to Budget Year Since FY 1998 PB

(U) Current Budget Submit/FY 1999 PB

Total

Cost

Cont

FY 1997

8,842

9,212

-200

-170

-15

8,827

FY 1998

10,933

10,933

-451

-197

-80

4,408

FY 1999

4,488

Cont

(U) Change Summary Explanation:

Funding: Funding levels vary due to timing of patient physical exams.

Schedule: Not Applicable.

Technical: Not Applicable.

(U) C. Other Program Funding Summary: Not Applicable.(U) D. Schedule Profile: Not Applicable.

Project 2767

Page 3 of 3 Pages

Exhibit R-2 (PE 0605306F)

1145

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0605712F  
PE TITLE: Initial Operational Test & Eval

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605712F Initial Operational Test & Eval								0191	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
0191 Initial Operational Test & Evaluation (IOT&E)		21,744	27,153	24,541	28,244	29,228	30,111	30,683	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) A. **Mission Description and Budget Item Justification:** IOT&E is an evaluation of a system's performance when the complete system is tested and evaluated against operational criteria by personnel with the same qualifications as those who will operate, maintain and support the system when deployed. In general, IOT&E is performed on new systems in development, major modifications and other systems as directed. This PE funds Congressionally mandated IOT&E to support major weapon system acquisition decisions (Milestone III). For major systems designated for use in combat, the law requires IOT&E be completed under realistic field conditions before proceeding beyond low rate initial production. As an essential element of IOT&E, this PE will fund major Operational Utility Evaluations (OUE), Early Operational Assessments (EOA) and Operational Assessments (OA) which support major milestones and decision points prior to Milestone III. IOT&E programs are identified in five categories: aircraft/support; space; missile/munitions; computer, communication, command and control and information (C4I); and general. This PE funds the costs of the test (e.g., data reduction, range costs, etc.), not the development of test resources or the maintenance of test infrastructure. Air Force Operational Test and Evaluation Center (AFOTEC) obtains general support services from contracts awarded after employing full and open competition contracting strategies. This program element is in Budget Activity 6, RDT&E Management Support, because it funds weapon system IOT&E tests conducted to evaluate a system's operational effectiveness and suitability and to identify any operational deficiencies or need for modifications in support of the acquisition process.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605712F Initial Operational Test & Eval	0191	
(U) FY 1997 (\$ in Thousands):			
- (U) \$ 5,998	(U) Category: Aircraft/Support. Conducted IOT&E on the F-22; Joint Strike Fighter (JSF); F- 15C/E TEWS; B-1 CMUP BLK D; B-1 CMUP BLK E; B-1B CMUP BLK F; CV-22; and other numerous systems. - F-22: Developed and gained approval for the Operational Assessment Plan to support Low Rate Initial Production (LRIP). Conducted F-22 FMS Review. Developed modeling/simulation plan, F-15C Comparison Test Plan, Roll-up Methodology Model, and Integrated Data Processing Plan. - JSF: Developed and implemented initial AFOTEC Test Concept. Initiated the development of Critical Operational Issues (COIs), Measures of Effectiveness (MOEs), and Measures of Performance (MOPs) with US Navy, US Marine Corps, and Air Combat Command. - F-15 TEWS: The system provides self protection for F-15 aircraft. TEWS consists of four federated subsystems; the ALR-56 Radar Warning Receiver (RWR), the ALQ-135 Internal Countermeasures Set (ICS-a jammer), the ALQ-128 Electronic Warfare Warning Set (EWWS), and the ALE-45 Countermeasures Dispenser (CMD). The ALR-56C provides threat warning for F-15C/E aircraft. The Band 3 provides countermeasures for F-15C/E aircraft. Neither the ALR-56C, Band 3, or Bank 1.5 have ever undergone an IOT&E. All of the ALR-56Cs and Band 3s have been produced. - B-1 CMUP Block D: Conducted Operational Assessment. - B-1 CMUP Blocks E/F: Conducted advance planning. - CV-22: Conducted Operational Assessment.		
- (U) \$ 5,498	(U) Category: Space. Conducted IOT&E on CMU-CMU; ICBM Minuteman III GRP; MILSTAR; Evolved Expendable Launch Vehicle (EELV); Space Based Infrared System (High); Space Based Infrared System-LOW ( SBIRS-LEO) and other numerous systems. - CMU: Conducted Granite Shield and Air Mission Testing. - ICBM GRP: Conducted Operational Assessment and modeling/simulation. - MILSTAR: Complete Low Data Rate IOT&E and pre-test planning for MILSTAR II IOT&E - EELV: Conducted Operational Assessment, IOT&E Pre-test planning and Modeling/Simulation. - SBIRS (High): Conducted pre-test planning, modeling/simulation, validation verification & accreditation (VV&A) effectiveness model, ground and space segment survivability analysis, and manning, workload and performance assessment. - SBIRS (Low): Conducted OT&E program readiness assessment, monitoring design and test activities, infrared sensor stimulation/risk reduction analysis (IRSS), hardware/software integration for flight test demo, hardbody radiation analysis, and pre-test planning.		

Project 0191

Page 2 of 7 Pages

Exhibit R-2 (PE 0605712F)

Project 0191

Page 2 of 7 Pages

Exhibit R-2 (PE 0605712F)

1148

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
<b>6 - Management and Support</b>	<b>0605712F Initial Operational Test &amp; Eval</b>	<b>0191</b>		
<p>           -- (U) \$ 2,452            (U) Category: <u>Missile/Munitions</u>. - Conducted IOT&amp;E on Joint Direct Attack Munitions (JDAM); Joint Standoff Weapon (JSOW); AIM-9X Air-to-Air (AIM-9X); and Joint Air-to Surface Stand-Off Missile (JASSM).            - JDAM: Conducted test planning, operational assessment and IOT&amp;E contractor support, target build-up, and range support.            - JSOW: Conducted test planning, test execution, contractor support, and range support.            - AIM-9X: Conducted Modeling/Simulation.            - JASSM: Oct 96 - Mar 97. Completed Evaluation Concept and started OT&amp;E Test Plan including: test design matrix, refinement of test scenarios, development of JASSM survivability, damage and reliability methodology. Outlined preliminary Data Management Analysis Plan (DMAP).         </p> <p>           -- (U) \$ 3,203            (U) Category: <u>Computer, Communication, Command and Control and Information System (C4 I)</u>. Conducted IOT&amp;E on JTIDS Class 2 Terminal Multiservice (JTIDS CL2).            - JTIDS Class 2 Terminal: Conducted Multi-service IOT&amp;E and range support.         </p> <p>           -- (U) \$ 4,593            (U) Category: <u>General</u>. Conducted IOT&amp;E on Wind Corrected Munitions Dispenser (WCMD) and Chemical Hardened Air Transportable Hospital (CHATH) and other numerous systems.            - WCMD: System is a new tail kit designed to correct for launch transients, ballistic error from lofts, medium-and high altitude deliveries, and unknown winds between release point and function altitude for CBU (CEM/Gator/SFW) munitions. The combined DT/IOT&amp;E supports an initial LRIP decision in Nov 97, a B-52 required assets available (RAA) data in Feb 97 and Milestone III in FY99.            - CHATH: Program is a modification to the currently-fielded Air Transportable Hospital (ATH). The additional configuration includes currently-fielded M-28 chemical liners and airlocks, and the developed chemically hardened air management plan (CHAMP), a four-to-one replacement for the ECU. The CHAMP provides the over-pressurization and filtered air needed to chemically harden the ATH. DT&amp;E completed in Dec 96, system certification in Feb. 97, IOT&amp;E testing 3 Mar - 7 Apr 97, and Milestone III decision in May 97.         </p> <p>           -- (U) \$21,744      Total         </p>				

Project 0191

Page 3 of 7 Pages

Exhibit R-2 (PE 0605712F)

1149

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998
	0605712F Initial Operational Test & Eval	PROJECT 0191
6 - Management and Support		
(U) FY 1998 (\$ in Thousands):		
- (U) \$ 9,743	<p>(U) Category: Aircraft/Support. Conduct IOT&amp;E on the F-22; Joint Strike Fighter (JSF); F-15 TEWS; B-1 CMUP BLK D; B-1 CMUP BLK E; B-1B CMUP BLK F; CV-22 and other numerous systems.</p> <p>- F-22: Implement Operational Assessment plan and reporting results to LRIP. Finalize Roll-up Methodology Model and F-15C Comparison Test Plan and coordinate required range and aircraft requirements.</p> <p>- JSF: Develop, coordinate with USN/USMC, and gain approval of Early Operational Assessment Plan. Prepare resource requirement plan and initiate resource acquisition.</p> <p>- F-15 TEWS: Conduct suitability assessment, and type 1 training</p> <p>- B-1B CMUP Block D: Conduct IOT&amp;E testing.</p> <p>- B-1B CMUP Block E: Conduct advance planning, contractor support modeling simulation</p> <p>- B-1B CMUP Block F: Conduct advance planning, contractor support, fuze model development, Joint Modeling and Simulation System (JMASS), and end game interface work.</p> <p>- CV-22: Conduct operational test.</p>	
- (U) \$ 5,745	<p>(U) Category: Space. Conduct IOT&amp;E on CMU-CMU; ICBM-Minuteman III Guidance Program (ICBM-MMIII GRP); MILSTAR; Evolved Expendable Launch Vehicle (EELV); Space Based Infrared System-High; Space Based Infrared System-LOW (SBIRS-LEO) and other numerous systems.</p> <p>- CMU: Finish air mission testing, and Cheyenne Mountain testing.</p> <p>- ICBM GRP: Modeling/Simulation, range support, and guidance replacement testing.</p> <p>- MILSTAR: Participate in combined DT/OT.</p> <p>- EELV: Conduct Operational Assessment, IOT&amp;E pre-test planning, modeling/simulation</p> <p>- SBIRS (HIGH): Modeling/simulation, Validation Verification and Accreditation (VV&amp;A) Effectiveness models, ground and space segment survivability analysis, operational assessment of ground consolidation, hardware/software integration, and planning for FY99 IOT&amp;E.</p> <p>- SBIRS (LOW): OT&amp;E Program Readiness Assessment, Modeling and Simulation, Test and Evaluation Planning; and pre-test planning.</p>	
- (U) \$ 3,228	<p>(U) Category: Missile/Munitions. Conduct IOT&amp;E on Joint Direct Attack Munitions (JDAM); Joint Standoff Weapon (JSOW); AIM-9X Air-to-Air (AIM-9X); and Joint Air-to Surface Stand-Off Missile (JASSM).</p> <p>- JDAM: Conduct IOT&amp;E testing, contractor support, and range support</p> <p>- JSOW: IOT&amp;E testing, phase II test planning and contract support</p> <p>- AIM-9X: Data Reduction, DMAP production and modeling/simulation</p> <p>- JASSM: Oct 97 - Jan 98 - Complete OT&amp;E Test Plan; develop and provide program introduction document to test ranges; complete and brief Milestone II operational assessment; finalize CDT/OT plan with JPO and contractors, range costs including simulator initial checkout and possible simulator deployments.</p>	

Project 0191

Page 4 of 7 Pages

Exhibit R-2 (PE 0605712F)

1150

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605712F Initial Operational Test & Eval	0191	
- (U) \$ 2,939	(U) Category: Computer, Communication, Command and Control and Information System (C4I). Conduct IOT&E on Region/Sector Air Operations Center (R/SAOC); and Joint Precision Approach and Landing System (JPALS) and other numerous systems. - R/SAOC (formerly R/SOCC): Concept development and test plan developments. - JPALS: Conducting Operational Test, contractor support, data analysis, data reduction, and range support.		
- (U) \$ 5,498	(U) Category: General. Conduct IOT&E on Wind Corrected Munitions Dispenser (WCMD) and other numerous systems. - WCMD: IOT&E test continues at Eglin AFB FL, and Utah Test and Training Range. Dedicated IOT&E will employ inert munitions to evaluate multiple-wean deliveries and to measure CEP to an 80% confidence level.		
- (U) \$27,153	Total		
(U) FY 1999 (\$ in Thousands):			
- (U) \$ 8,720	(U) Category: Aircraft/Support. Conduct IOT&E on the F-22; Joint Strike Fighter (JSF); F-15C/E TEWS; B-1 CMUP BLK E; B-1B CMUP BLK F; CV-22 and other numerous systems. - F-22 : Conduct F-15C Comparison Test open-air Testing; Conduct Operational Assessment to Support Certification Ready for IOT&E. - JSF: Conduct Early Operation Assessment. - F-15 TEWS: Conduct IOT&E testing. - B-1B CMUP Block E: Advance planning, contractor support, and modeling/simulation. - B-1B CMUP Block F: Advance Planning, contractor support, and fuze model development. - CV-22: Contractor support for operational evaluation (OPEVAL)		
- (U) \$ 5,185	(U) Category: Space. Conduct IOT&E on CMU-CMU; MILSTAR; Evolved Expendable Launch Vehicle (EELV) and other numerous systems. - CMU: Complete Cheyenne Mountain Testing. - MILSTAR: Participate in combined DT/OT. - EELV: Conduct Operational Assessment #2.		
- (U) \$ 2,961	(U) Category: Missile/Munitions. Conduct IOT&E for Joint Standoff Weapon (JSOW); AIM-9X Air-to-Air (AIM-9X); and Joint Air-to Surface Stand-Off Missile (JASSM). - JSOW: Conduct IOT&E testing, phase II testing planning, and contractor support. - AIM-9X: Conduct data reduction, DMAP Production, and modeling/simulation. - JASSM: Participate and accomplish CDT/OT; prepare for IOT&E (planned start Feb ). Provide manpower and equipment, and range cost including possible simulator deployment and early CDT/OT testing.		

Project 0191

Exhibit R-2 (PE 0605712F)

Page 5 of 7 Pages

Project 0191

Page 5 of 7 Pages

Exhibit R-2 (PE 0605712F)

1151

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605712F Initial Operational Test & Eval	0191	
-- (U) \$ 2,705	(U) Category: <u>Computer, Communication, Command and Control and Information System (C4I)</u> . Conduct IOT&E on Region/Sector Air Operation Center (R/SACC) and other numerous systems. - R/SAOC (formerly R/SOCC): Conduct IOT&E testing		
-- (U) \$ 4,970	(U) Category: <u>General</u> . Conduct IOT&E Casualty Care Systems; Base Intrusion Security Systems (BISS); Chemical Warfare Defense, Next Generation Generators and External Control Unit and other numerous systems. - CCS: Test all newly developed flyaway transportable medical care systems. - BISS: Conduct on-going tests of various commercial off-the-shelf and other personnel and asset protection techniques. - CWD: AF focus of chemical protection programs. - Next Generation Generator and External Control Units: Support the Airbase Operability Concept.		
-- (U) \$24,541	Total		

Project 0191

Page 6 of 7 Pages

Exhibit R-2 (PE 0605712F)

1152

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
<b>6 - Management and Support</b>		<b>0605712F Initial Operational Test &amp; Eval</b>	<b>0191</b>
<b>(U) B. Program Change Summary (\$ in Thousands):</b>			
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	21,454	28,319	25,035
(U) Adjustments to Appropriated Value	21,921	28,319	
a. Congressional/General Reductions	-467	-1,166	
b. SBIR			
c. Omnibus or Other Above Threshold Reprogramming			
d. Below Threshold Reprogramming	290		
e. Rescissions			
(U) Adjustment to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 1999 President's Budget	21,744	27,153	-494
			24,541
			Cont
<b>(U) Change Summary Explanation:</b>			
Funding: FY97 general reductions of \$467 thousand and below threshold reprogramming of \$290 thousand for Precision Landing System Receiver. FY98 general reductions of \$1,166 thousand. FY99 adjustment of \$494 thousand due to revised inflation indices.			
Schedule: None.			
Technical: None.			
<b>(U) C. Other Program Funding Summary (\$ in Thousands):</b> Not applicable.			
<b>(U) D. Schedule Profile:</b> IOT&E is not an acquisition program. There are dozens of IOT&E programs in any one fiscal year. The AFOTEC automated test resource plan database does not provide quarterly IOT&E test schedules. However, specific IOT&E schedules can be made available on a case-by-case basis through the appropriate AFOTEC test resource management office.			

Project 0191

Page 7 of 7 Pages

Exhibit R-2 (PE 0605712F)

1153

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0605807F  
PE TITLE: Test And Evaluation Spt

UNCLASSIFIED

## RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

### 6 - Management and Support

### 0605807F Test And Evaluation Spt

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	413,892	372,496	370,168	393,523	375,245	389,363	406,804	Continuing	TBD
06TS Test and Evaluation Support (1,4)	307,564	351,502	348,933	370,339	353,860	365,017	382,042	Continuing	TBD
06TG 46 Test Group	19,828	20,994	21,235	23,184	21,385	24,346	24,762	Continuing	TBD
06AS Aircraft Support (2)	11,431	0	0	0	0	0	0	0	TBD
06MC Minor Construction (3,4)	3,500	0	0	0	0	0	0	0	TBD
06MR Maintenance and Repair (3,4)	71,569	0	0	0	0	0	0	0	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

- (1) Beginning in FY98, all test support mission requirements and their associated funding are consolidated in projects 06TS and 06TG of PE 0605807F. All test support aircraft requirements and funding were realigned to 06TS for FY98-03 (formerly in project 06AS for FYs 96 and 97). Also consolidated in project 06TS starting in FY98 are the test facility maintenance, repair and minor construction requirements formerly funded in projects 06MR and 06MC. Those two projects captured both test and non-test requirements in FYs 96 and 97. In FY98, the non-test maintenance and repair and minor construction requirements (i.e., in support of non-test general installation infrastructure such as dormitories, general purpose buildings) were transferred to PE 0605878F (Maintenance and Repair) and PE 0605876F (Minor Construction), respectively, thus carving out the non-test requirements and placing them in PEs whose nomenclature mirrors the rest of the Air Force's base support functions.
- (2) Aircraft Support requirements and funding moved to Test and Evaluation Support, project 06TS, for FYs 98-03.
- (3) In FY98, funding for Minor Construction, 06MC was transferred to PE 0605876F, and funding for Maintenance and Repair, project 06MR was transferred to PE 0605878F. The total program content and funding transfer from PE 0605807F to these PE's was approximately 75% through FY98-03. The remaining 25% was transferred to project 06TS for specific test mission support requirements.
- (4) In FY99 and outyears, the non-test maintenance and repair and minor construction requirements were transferred from RDT&E to O&M (PEs 0702878F, AFMC Maintenance and Repair, and PE 0702876F, Minor Construction) to support DoD's policy revision to fund base operating non-test functions in the O&M appropriation. This FY99 and outyear transfer did not affect this program element's content or funding because of the reasons stated above in notes (1) and (3).

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

## 0605807F Test And Evaluation Spt

(U) A. Mission Description and Budget Item Justification: Test facilities, capabilities and resources operated through this program include wind tunnels, rocket and jet engine test cells, limited space environmental simulation chambers, armament test ranges, climatic test facilities, avionics test facilities, aircraft testbeds, dry lakebed landing sites, instrumented test ranges, maintenance and repair of test facilities, civilian payroll, and contractor services. It also provides resources for maintaining Air Force Materiel Command (AFMC) assigned test and test support coded aircraft. No acquisition contracts are funded from this program; test support contracts for services and supplies and equipment are predominately awarded on the basis of full and open competition. This program element is in Budget Activity 6, RDT&E Management Support, because it funds infrastructure resources (civilians, aircraft, facilities and ranges) to operate the Air Force test activities which are included in the Department of Defense (DoD) Major Range and Test Facility Base (MRTFB).

(U) B. Program Change Summary (\$ in Thousands):

(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999	Total Cost
(U) Appropriated Value	414,901	389,348	389,527	Cont
(U) Adjustments to Appropriated Value	425,195	387,848		
a. Congressional/General Reductions	-8,998	-15,352		
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-1,689			
e. Rescissions	-616			
(U) Adjustments to Budget Years Since FY 1998 PB			-19,359	
(U) Current Budget Submit/FY 1999 President's Budget	413,892	372,496	370,168	Cont

## (U) Change Summary Explanation:

Funding: FY97 below threshold reprogramming of \$1,689 thousand for Base Operations Support requirements at Eglin, Edwards and Arnold AFBs. FY98 changes are due to general reductions. FY99 budget reduction reflects a revised test infrastructure maintenance, repair and base support program in order to meet only the most critical and urgent requirements needed to sustain FY99 operations.

Schedule: None.

Technical: None.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
BUDGET ACTIVITY	PE NUMBER AND TITLE	
<b>6 - Management and Support</b>	<b>0605807F Test And Evaluation Spt</b>	
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> : Not applicable.		
Related RDT&E:		
(U) PE 0604759F, Major T&E Investment (Technical capability improvement and modernization)		
(U) PE 0604256F, Threat Simulator Development		
(U) PE 0604940D, Central Test & Evaluation Improvement Program (T&E investments for new tri-service test capabilities)		
(U) D. <u>Schedule Profile</u> : Most all T&E support requirements are continuous and are not driven by discrete start/end dates.		

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

0605807F Test And Evaluation Spt

PROJECT  
06TS

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	307,564	351,502	348,933	370,339	353,860	365,017	382,042	Continuing	TBD
06TS Test and Evaluation Support (1,4)									

(1) FY98 requirements and funding increased for Test and Evaluation Support, project 06TS, to reflect a transfer of test mission maintenance and repair and minor construction requirements formerly identified in projects 06MR and 06MC, respectively. Likewise, all content in PE 0605896F (RDT&E Base Operations Support) that was more accurately identified as test support has been transferred to this project effective starting in FY98. In addition, all aircraft support requirements and funding (FYs 98-03) are now reflected in this project for FY98-03 (formerly in project 06AS). The cumulative effect of these changes carves out test from non-test, aligns test vs non-test requirements in their appropriate PEs, and shows a more accurate accounting for both test support and base support functions.

(U) A. Mission Description and Budget Item Justification: This project provides resources to operate the Air Force test activities which are included in the Department of Defense (DoD) Major Range and Test Facility Base (MRTFB). Test facilities/capabilities operated through this program include wind tunnels, rocket and jet engine test cells, limited space environmental simulation chambers, armament test ranges, climatic test facilities, avionics test facilities, aircraft testbeds, dry lakebed landing sites, instrumented test ranges, and test aircraft maintenance. T&E Support funds test infrastructure overhead activities including: Command and supervisory staffs; supply stocks; maintenance, repair, and replacement of worn or obsolete test equipment and facilities; test infrastructure for data collection, transmission, reduction, and analysis; civilian salaries; temporary duty travel; support contract costs for hardware and software engineering and maintenance; and minor improvement and modernization projects. It also funds overhead test aircraft depot level maintenance such as: Programmed Depot Maintenance (PDM), the calendar-based cyclic scheduling of aircraft into depots for update/inspection; modifications and any other depot level repairs required by the aircraft System Program Directors (SPD); engine overhauls; depot-provided area assistance; and assorted ground support equipment overhauls. Three major Air Force test centers are supported by this project: (1) Arnold Engineering and Development Center (AEDC), located at Arnold Air Force Base, TN, whose test infrastructure overhead supports operations for the largest complex of ground test facilities in the free world (includes transonic, supersonic, and hypersonic wind tunnels; rocket motor and turbine engine test cells; space environmental test chambers, hyperballistic ranges; and other specialized facilities). (2) Air Force Flight Test Center (AFFTC), located at Edwards AFB, CA, whose test infrastructure overhead supports weapons system development and operational test and evaluation for aircraft, aircraft subsystems and aircraft weapon systems, aerospace research vehicles, unmanned miniature vehicles, cruise missiles, parachute delivery/recovery systems, cargo handling systems, and Electronic Warfare (EW) systems for DoD and allied forces. The AFFTC mission includes the USAF Test Pilot School. (3) Air Force Development Test Center (AFDTC), located at Eglin AFB, FL, whose test infrastructure overhead supports development testing of non-nuclear air armaments (including aircraft guns, ammunition, bombs, and missiles). AFDTC provides a scientific test process that supports the development and enhancement of munitions systems. T&E support services contracts are severable and are awarded on the basis of full and open competition.

Project 06TS

Page 4 of 19 Pages

Exhibit R-2 (PE 0605807F)

1158

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support

0605807F Test And Evaluation Spt

PROJECT  
06TS

(U) FY 1997 (\$ in Thousands):

## Arnold Engineering and Development Center

– (U) \$ 111,625 Provided test infrastructure overhead support to enable ground testing for classified programs, and unclassified programs (F-22, Joint Direct Attack Munition (JDAM), F-15, F-16, Joint Strike Fighter (JSF), B-1B, B-2, C-130, Advanced Medium Range Air to Air Missile (AMRAAM), AIM 9X, Minuteman, Evolutionary Expendable Launch Vehicle (EELV), Titan IV and F-18).

## Aircraft Modification Directorate

– (U) \$ 2,000 Funded indirect labor and supporting expenses (training, travel, office supplies, etc.) and support services required for the aircraft modification mission.

## Air Force Flight Test Center

– (U) \$ 96,250 Provided test infrastructure overhead support enabling testing of the B-1B, B-2, F-16, F-15, F-15E, F-22, Advanced Fighter Technology Integration (AFTI)/F-16, C-17, Avionics Test and Integration Complex (ATIC), Advanced Range Instrumentation Aircraft (ARIA), Electronic Combat Countermeasures (ECCM), Electronic Warfare (EW) (B-1B ALQ-161, F-16 AN/ASQ-213, C-130 ALQ-172, etc.), and classified programs.

– (U) \$ 18,600 USAF Test Pilot School operating costs.

## Air Force Development Test Center

– (U) \$ 68,239 Provided test infrastructure support for non-nuclear air armaments (AMRAAM, SEEK EAGLE, Theater Missile Defense (TMD), JDAM, Joint Stand-Off Weapon (JSOW), Wind Corrected Munitions Dispenser (WCMD), Joint Air to Surface Standoff Missile (JASSM) etc.); Command, Control, Communications, Computers and Information (C4I) / Command and Control Consolidated Test Force (C2CTF) (Joint Targeting Information Display System (JTIDS), Base and Installation Security System (BISS), TMD, Theater Battle Management Core System (TBMCS), and aircraft software upgrades (Air Force Mission Support System (AFMSS)).

## Service Requirements

– (U) \$9,900 DFAS financial reporting services payment  
 – (U) \$ 450 Federal Workforce Restructuring Act (FWRA) payment  
 – (U) \$ 500 Vision 21 Support  
 – (U) \$307,564 Total

(U) FY 1998 (\$ in Thousands):

## Arnold Engineering and Development Center

– (U) \$110,209 Continue test infrastructure overhead support to enable ground testing for classified programs, and unclassified programs (F-22, JDAM, F-15, F-16, JSF, B-1B, B-2, C-130, AMRAAM, AIM 9X, Minuteman, EELV, Titan IV and F-18). Begin test infrastructure overhead support for Tunnel 9 that was transferred from the Navy to the USAF effective 1 Oct 97.

– (U) \$ 13,331 T&E specific Base Operating Support (BOS) requirements

– (U) \$ 15,922 Maintenance, repair and minor construction for test infrastructure requirements.

Project 06TS

Page 5 of 19 Pages

Exhibit R-2 (PE 0605807F)

1159

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
06TS

## 6 - Management and Support

## 0605807F Test And Evaluation Spt

- (U) \$ 15 Federal Workforce Restructuring Act (FWRA) payment

## Air Force Flight Test Center

- (U) \$ 99,078 Continue to provide test infrastructure overhead support enabling testing of the B-1B, B-2, F-16, F-15, F-15E, F-22, AFTI/F-16, C-17, ATIC, ARIA, ECCM, EW (B-1B ALQ-161, F-16 AN/ASQ-213, C-130 ALQ-172, etc.), and classified programs.

- (U) \$ 18,900 USAF Test Pilot School operating costs.

- (U) \$ 3,464 T&E specific BOS requirements

- (U) \$ 10,541 Programmed Depot Maintenance and engine overhauls for aircraft assigned to AFFTC.

- (U) \$ 1,460 Maintenance, repair and minor construction for test infrastructure requirements.

- (U) \$ 148 Federal Workforce Restructuring Act (FWRA) payment

## Air Force Development Test Center

- (U) \$ 66,775 Continue test infrastructure overhead support for non-nuclear air armaments (AMRAAM, SEEK EAGLE, TMD, JDAM, JSOW, WCMD, etc.); C4I (JTIDS, BISS, TMD), and aircraft software upgrades.

- (U) \$ 6,901 T&E specific BOS requirements

- (U) \$ 3,220 Programmed Depot Maintenance and engine overhauls for aircraft assigned to AFDTIC.

- (U) \$ 1,430 Maintenance, repair and minor construction for test infrastructure requirements.

- (U) \$ 108 Federal Workforce Restructuring Act (FWRA) payment

- (U) \$351,502 Total

(U) FY 1999 (\$ in Thousands):

## Arnold Engineering and Development Center

- (U) \$111,080 Continue test infrastructure overhead support to enable ground testing for classified programs, and unclassified programs (F-22, JDAM, F-15, F-16, JSF, B-1B, B-2, C-130, AMRAAM, AIM 9X, Minuteman, EELV, Titan IV and F-18). Continue Tunnel 9 infrastructure support.

- (U) \$ 13,436 T&E specific BOS requirements

- (U) \$ 16,376 Maintenance, repair and minor construction for test infrastructure requirements.

## Air Force Flight Test Center

- (U) \$ 99,264 Continue to provide test infrastructure overhead support enabling testing of the B-1B, B-2, F-16, F-15, F-15E, F-22, AFTI/F-16, C-17, ATIC, ARIA, ECCM, EW (B-1B ALQ-161, F-16 AN/ASQ-213, C-130 ALQ-172, etc.)

- (U) \$ 19,200 USAF Test Pilot School operating costs.

- (U) \$ 11,456 Programmed Depot Maintenance and engine overhauls for aircraft assigned to AFFTC.

- (U) \$ 3,569 T&E specific BOS requirements

- (U) \$ 1,760 Maintenance, repair and minor construction for test infrastructure requirements.

## Air Force Development Test Center

Project 06TS

Page 6 of 19 Pages

Exhibit R-2 (PE 0605807F)

1160

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
<b>6 - Management and Support</b>	<b>0605807F Test And Evaluation Spt</b>	<b>06TS</b>		
- (U) \$ 60,572	Continue test infrastructure support for non-nuclear air armaments (AMRAAM, SEBK EAGLE, TMD, JDAM, JSOW, WCMD, JASSM etc.); C4I/C2CTF (JTIDS, BISS, TMD, TBMCS), and aircraft software upgrades (AFMSS).			
- (U) \$ 2,632	Programmed Depot Maintenance and engine overhauls for aircraft assigned to AFDTC.			
- (U) \$ 7,778	T&E specific BOS requirements			
- (U) \$ 1,810	Maintenance, repair and minor construction for test infrastructure requirements.			
- (U) \$348,933	Total			

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
06TS

## 6 - Management and Support

0605807F Test And Evaluation Spt

## (U) B. Program Change Summary (\$ in Thousands):

	FY 1997	FY 1998	FY 1999	Total
(U) Previous President's Budget (FY 1998 PB)	306,651	367,175	366,258	Cost
(U) Appropriated Value	314,101	366,045		Cont
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-4,834	-14,543		
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-1,248			
e. Rescissions	-455			
(U) Adjustments to Budget Years Since FY 1998 PB			-17,325	
(U) Current Budget Submit/FY 1999 President's Budget	307,564	351,502	348,933	Cont

## (U) Change Summary Explanation:

Funding: FY97 below threshold reprogramming of \$1,248 thousand for Base Operations Support requirements at Eglin, Edwards and Arnold AFBs.

## Funding FY98:

AFDTC: Reductions to Management Support funds will result in 1) deferment of purchasing Depot Level Repairables to support test proficiency training; 2) level of effort for the Eglin Range support contract has been decreased to provide support only for priority T&E programs causing delays to customer test schedules; 3) decrease to funding of the Precision Measurement Equipment Laboratory (PMEL) will result in backlog of equipment calibration for test programs and for AFDTC tenant organizations including the 33rd Fighter Wing, 16th Special Operations Wing, 20th Space Surveillance Squadron, and the Eglin Regional Hospital; 4) decrease in funding to Transient Alert services resulting in reduction from 24 hour support to 8 hours per day. FY98 reductions were also taken by reducing the level of effort in T&E BOS and MR/MC. The permanent fix to the roof of lean-to offices of Hangar 71 will be deferred. These offices house program offices, test engineers, and computer systems. Continuous leaks are causing continuing power outages and water damage. Building 73 Fire Detection System upgrade and installation will be deferred. Unfunded T&E BOS and MR/MC requirements are deferred to FY99 and out.

## Funding FY99:

AFDTC: Reductions to Management Support funding resulted in: 1) the elimination of AFDTC two test support helicopters resulting in the loss of a low velocity sensor test bed, the loss of capability to support programs in remote parts of the Eglin Range, and elimination of instantaneous support for emergency situations on Eglin Range; 2) reduction of T&E munitions support to Foreign Military technology evaluation programs will result in delays to and decreases in the level of support to joint AF-Foreign Military munitions development programs and foreign technology evaluation programs; 3) deferment of the replacement of computer workstations supporting test programs and AFDTC support operations. Funding to support DLRs, PMEL, and Transient Alert will continue to be decreased. Only the most critical T&E BOS and MR/MC requirements continue to be funded. Several facility projects including the installation of a fire detection system, the repair of Foreign Object Damage (FOD) prevention grates around AFDTC hangars, the repair of hangar doors and weather sealing, and repair of water damaged offices (due to leaking roofs) will be postponed. Unfunded requirements are deferred to FY00 and out.

Project 06TS

Page 8 of 19 Pages

Exhibit R-2 (PE 0605807F)

1162

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605807F Test And Evaluation Spt	06TS	
<p>Schedule: None.</p> <p>Technical: None.</p> <p>(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>: Not applicable.</p> <p>Related RDT&amp;E:</p> <p>(U) PE 0604759F, Major T&amp;E Investment (Technical capability improvement and modernization)</p> <p>(U) PE 0604256F, Threat Simulator Development</p> <p>(U) PE 0604940D, Central Test &amp; Evaluation Improvement Program (T&amp;E investments for new tri-service test capabilities)</p> <p>(U) D. <u>Schedule Profile</u>: Most T&amp;E test infrastructure overhead requirements are continuous and are not driven by discrete start/end dates.</p>			

Project 06TS

Page 9 of 19 Pages

Exhibit R-2 (PE 0605807F)

1163

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0605807F Test And Evaluation Spt

PROJECT

06TG

## 6 - Management and Support

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
06TG 46 Test Group	19,828	20,994	21,235	23,184	21,385	24,346	24,762	Continuing	TBD

(U) A. Mission Description and Budget Item Justification: This project funds test infrastructure overhead support including: Command and supervisory staffs; supply stocks; upkeep, refurbishment, repair, and replacement of non-repairable or obsolete test equipment; test infrastructure for data collection, transmission, reduction, and analysis; civilian salaries, utilities, temporary duty travel, support contract costs for hardware and software engineering and maintenance. Project infrastructure support is provided for the unique capabilities of the 46th Test Group facilities: Central Inertial Guidance Test Facility (CIGTF), the High Speed Test Track (HSTT), and the Radar Target Scatter (RATSCAT) facility. CIGTF provides independent assessments of inertial components, aircraft navigation systems, and missile guidance systems. HSTT capabilities include full-scale testing in flight environments, realistic live-fire simulations, test item and target fragment recovery, and precision trajectory analysis and high speed photography. RATSCAT provides radar cross section (RCS) monostatic and bi-static amplitude and phase measurements, antenna pattern measurements, glint and near field measurements for low observable targets. The 46<sup>th</sup> TG support services contracts are severable and are awarded on the basis of full and open competition.

## (U) FY 1997 (\$ in Thousands):

- (U) \$3,598 Central Inertial Guidance Test Facility (CIGTF): FY97 supported test programs such as Advanced Inertial Concepts (AICON), continued Global Positioning System-Joint Program Office (GPS-JPO) Responsible Test Organization RTO responsibilities, Project 2000 integration support, GPS jamming and electronic countermeasures, NAVWAR, Federal Aviation Administration (FAA) Wide Area Augmentation System, GPS integrated and embedded INS programs, aircraft navigation systems, including B-2 and F-22, munitions navigation systems such as JDAM and other programs.
- (U) \$4,845 Holloman High Speed Test Track (HHSTT): Provided infrastructure test support (including full-scale testing simulating in-flight environments, realistic live-fire simulations, test item and target fragment recovery, precision trajectory analysis, and high speed photography) for the F-22A Ejection System, 4th Generation Ejection Seat, Standard Missile (SM) 2 Seeker, SM 2 Live Fire T&E (LFT&E), Patriot Advanced Capability (PAC) 3 LFT&E, Theater High Altitude Area Defense (THAAD) LFT&E, Special Operation Forces (SOF) Directed Infrared Countermeasures (DIRCM), Advanced Inertial Concepts (AICON) missile navigation system, and other programs.
- (U) \$4,214 Radar Target Scatter (RATSCAT) facility: Provided infrastructure test support for programs such as static RCS testing for stores, low observable testbeds, and other classified programs.
- (U) \$7,171 46th Test Group Headquarters (46TG): Provided command guidance, resource management, plans and programs, protection services, information systems, logistics, liaison support and scheduling for WSMR airspace, photo and safety chase, support of air-to-air and air-to-ground live fire, life support equipment services, and aerospace ground equipment support.
- (U) \$19,828 Total

Project 06TG

Page 10 of 19 Pages

Exhibit R-2 (PE 0605807F)

1164

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support 0605807F Test And Evaluation Spt

PROJECT

06TG

(U) FY 1998 (\$ in Thousands):

- (U)	\$4,411	Central Inertial Guidance Test Facility (CIGTF): Provide infrastructure test support for programs such as AICON, continued GPS-JPO RTO responsibilities, Project 2000 integration support, GPS jamming and electronic countermeasures, NAVWAR, FAA Wide Area Augmentation System, GPS integrated and embedded INS programs, aircraft navigation systems, including B-2 and F-22, munitions navigation systems such as JDAM and other programs.
- (U)	\$5,562	Holloman High Speed Test Track (HSTT) : Provide infrastructure test support for the F-22A Ejection System, Russian K-36 Derivative Ejection Seat, Standard Missile (SM) 2 Seeker, SM 2 Forward Looking Fuze, SM-2 Live Fire T&E (LFT&E), Patriot Advanced Capability (PAC) 3 LFT&E, Theater High Altitude Area Defense (THAAD) LFT&E, Army Tactical Infrared Countermeasure System (ATIRCMS) Phase II, Long-Range Fiber Optic Guided (LONGFOG) missile, and other programs.
- (U)	\$5,392	Radar Target Scatter (RATSCAT) facility: Provide infrastructure test support for programs such as static RCS testing for stores, low observable testbeds, and other classified programs.
- (U)	\$5,629	46th Test Group Headquarters (46TG). Provide command guidance, resource management, plans and programs, protection services, information systems, logistics, liaison support and scheduling for WSMR airspace, photo and safety chase, support of air-to-air and air-to-ground live fire, life support equipment services, and aerospace ground equipment support.
- (U)	\$20,994	Total

(U) FY 1999 (\$ in Thousands):

- (U)	\$4,592	Central Inertial Guidance Test Facility (CIGTF): Provide infrastructure test support for programs such as AICON, continued GPS-JPO RTO responsibilities, Project 2000 integration support, GPS jamming and electronic countermeasures, NAVWAR, FAA Wide Area Augmentation System, GPS integrated and embedded INS programs, aircraft navigation systems, including B-2 and F-22, munitions navigation systems such as JDAM and other programs.
- (U)	\$5,790	Holloman High Speed Test Track (HHSTT): Provide infrastructure test support (including full-scale testing simulating in-flight environments, realistic live-fire simulations, test item and target fragment recovery, and precision trajectory analysis and high speed photography) for the F-22A Ejection System, Advanced Concepts Escape system (ACES) II continuous Improvement Program (CIP), Standard Missile (SM) 2 Seeker, SM 2 LFT&E, SM 3 LFT&E, Patriot Advanced Capability (PAC) 3 Live Fire T&E (LFT&E), Theater High Altitude Area Defense (THAAD) LFT&E, and other programs.
- (U)	\$5,613	Radar Target Scatter (RATSCAT) facility: Provide infrastructure test support for programs such as static RCS testing for stores, low observable testbeds, and other classified programs.
- (U)	\$5,240	46th Test Group Headquarters (46TG). Provide command guidance, resource management, plans and programs, protection services, information systems, logistics, liaison support and scheduling for WSMR airspace, photo and safety chase, support of air-to-air and air-to-ground live fire, life support equipment services, and aerospace ground equipment support.
- (U)	\$21,235	Total

Project 06TG

Page 11 of 19 Pages

Exhibit R-2 (PE 0605807F)

1165

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0605807F Test And Evaluation Spt

PROJECT

06TG

## (U) B. Program Change Summary (\$ in Thousands):

	FY 1997	FY 1998	FY 1999	Total
(U) Previous President's Budget (FY 1998 PB)	20,154	22,173	23,269	Cost
(U) Appropriated Value	21,094	21,803		Cont
(U) Adjustments to Appropriated Value				
a. Congressional Reductions	-1,151	-809		
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-84			
e. Rescissions	-31			
(U) Adjustments to Budget Years Since FY 1998 PB			-2,034	
(U) Current Budget Submit/FY 1999 President's Budget	19,828	20,994	21,235	Cont

## (U) Change Summary Explanation:

Funding FY97: Below threshold reprogramming of \$84 thousand for Base Operations Support requirements at Eglin, Edwards and Arnold AFBs.

Funding FY98: Funding cuts push improvement of aging T&E equipment and facilities to FY99 and out. This increases the length of a standard test program. The level and quality of test products also suffer. Specifically 46 Test Group has delayed the upgrade of its Time Space Position Information (TSP) system. Under the new Federal Communication Commission (FCC) spectrum reallocation regulations, the range of the existing TSP system is limited, severely impacting navigation and Global Positioning System (GPS) testing. Replacement of HHSTT video test recording system has been delayed. This new digital recording system would increase the amount of data collected while decreasing costs. The GPS Modeling and Simulation laboratory has delayed the upgrade of its VAX computer workstations. Currently the capabilities of the lab are limited by the software available for the VAX computers.

Funding FY99: Funding cuts in FY99 will impact several upgrade projects to 46TG's aging test infrastructure. The RATSCAT Advance Measurement System will have to defer the modernization of its special access required (SAR) data room. Currently there is only one SAR data room. This greatly limits the number of SAR programs that can be accomplished. The addition of an additional SAR data room would increase the number of tests that can be simultaneously accomplished. The HHSTT currently has one aging Multi-Axis Seat Ejection (MASE) Sled. This sled supports the F-22 ejection seat program and the 4th Generation Ejection Seat Program. This is the only sled of its kind and is a single-point failure for numerous DoD programs. The addition of a second MASE sled will be postponed.

Schedule: None.

Technical: None.

Project 06TG

Page 12 of 19 Pages

Exhibit R-2 (PE 0605807F)

1166

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
6 - Management and Support	0605807F Test And Evaluation Spt	06TG	
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> : Not applicable.			
Related RDT&E:			
(U) PE 0604759F, Major T&E Investment (Technical capability improvement and modernization)			
(U) PE 0604256F, Threat Simulator Development			
(U) PE 0604940D, Central Test & Evaluation Improvement Program (T&E investments for new tri-service test capabilities)			
(U) D. <u>Schedule Profile</u> : 46TG infrastructure support operations are continuous and are not driven by discrete start/end dates.			
Project 06TG		Exhibit R-2 (PE 0605807F)	

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 6 - Management and Support

0605807F Test And Evaluation Spt

PROJECT

06AS

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
06AS Aircraft Support (2)	11,431	0	0	0	0	0	0	0	TBD

(U) A. **Mission Description and Budget Item Justification:** The RDT&E aircraft support program provides resources for maintaining Air Force Materiel Command (AFMC) assigned test and test support coded aircraft whose flying missions support the Department of Defense Major Range and Test Facility Base (MRTFB). This program supports a multitude of mission designs and configurations, with many prototype, preproduction, and extensively modified/instrumented one-of-a-kind aircraft. Funds pay for overhead test infrastructure depot level maintenance such as: Programmed Depot Maintenance (PDM), the calendar-based cyclic scheduling of aircraft into depots for update/inspection; modifications and any other depot level repairs required by the aircraft System Program Directors (SPD); engine overhauls; depot-provided area assistance; and assorted ground support equipment overhauls. Aircraft Support requirements and funding moved to Test and Evaluation Support, project 06TS, for FYs 98-03. This change eliminates the misunderstanding that Aircraft Support requirements are independent of Test and Evaluation Support when they are, in fact, dependent on one another, contribute to the same mission, and operate under the same reimbursable guidelines. Aircraft Support services and provided via project orders to AF Working Capital Fund (AFWCF) business areas located at the AF logistics centers.

## (U) FY 1997 (\$ in Thousands):

- (U) \$ 8,022 AFMTC aircraft programmed depot maintenance and special purpose vehicles maintenance.  
 - (U) \$ 2,021 AFMTC aircraft engine overhauls  
 - (U) \$ 1,122 AFDTC aircraft programmed depot maintenance and special purpose vehicles maintenance.  
 - (U) \$ 266 AFDTC aircraft engine overhauls  
 - (U) \$11,431 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$0 Not applicable.

## (U) FY 1999 (\$ in Thousands):

- (U) \$0 Not applicable.

Project 06AS

Page 14 of 19 Pages

Exhibit R-2 (PE 0605807F)

1168

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605807F Test And Evaluation Spt

06AS

## (U) B. Program Change Summary (\$ in Thousands):

	FY 1997	FY 1998	FY 1999	Total Cost Cont
(U) Previous President's Budget (FY 1998 PB)	11,899	0	0	
(U) Appropriated Value	12,161			
(U) Adjustments to Appropriated Value				
a. Congressional Reductions	-664			
b. Bosnia supplemental	-18			
c. Below Threshold Reprogramming	-48			
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY 1999 President's Budget	11,431	0	0	Cont

## (U) Change Summary Explanation:

Funding: FY97 below threshold reprogramming of \$48 thousand for Base Operations Support requirements at Eglin, Edwards and Arnold AFBs.

Schedule: None.

Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands): Not applicable.

## Related RDT&amp;E:

(U) PE 0604759F, Major T&E Investment (Technical capability improvement and modernization)  
 (U) PE 0604256F, Threat Simulator Development  
 (U) PE 0604940D, Central Test & Evaluation Improvement Program (T&E investments for new tri-service test capabilities)

(U) D. Schedule Profile: PDM schedules vary for each aircraft type every year; engine overhauls are tied to usage factors. Detailed data are available upon request.

Project 06AS

Page 15 of 19 Pages

Exhibit R-2 (PE 0605807F)

1169

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support 0605807F Test And Evaluation Spt

PROJECT  
06MC

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
06MC Minor Construction (3,4)	3,500	0	0	0	0	0	0	0	TBD

(1) Approximately 50% of FY98-03 content and funding for Minor Construction, project 06MC, was transferred to PE 0605876F. This transfer provides better focus and alignment of resources for non-test, common base operations support functions at Arnold, Eglin and Edwards AFBs. The other 50% of content was identified specifically as test mission support requirements and accordingly transferred to project 06TS.

(U) A. Mission Description and Budget Item Justification: This project provides essential minor construction at three AFMC installations: Eglin AFB FL, Edwards AFB CA, and Arnold AFB TN. Physical plant maintained by this account covers 800,000 acres of land; over four thousand structures in excess of 30 years old encompassing fifteen million square feet; over five million square yards of airfield pavement; 1900 miles of road network; utility systems that include 120 wells, 10 sewage treatment plants, 20 substations and over 1600 miles of high voltage electrical distribution lines. Minor construction contracts are awarded on the basis of full and open competition.

(U) FY 1997 (\$ in Thousands):

-(U) \$3,500      Financed in-house work performed by government employees (to include supplies, materials and equipment). Finance construction of Human Resource Development Computer Laboratory, replace plenum escape system transformer and add 16KV circuit breaker to plenum escape system substation; and finance addition to equipment research laboratory and provide additional well reservoir.  
 - (U) \$3,500      Total

(U) FY 1998 (\$ in Thousands):

- (U) \$0      Not applicable.

(U) FY 1999 (\$ in Thousands):

- (U) \$0      Not applicable.

Project 06MC

Page 16 of 19 Pages

Exhibit R-2 (PE 0605807F)

1170

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support

0605807F Test And Evaluation Spt

PROJECT

06MC

(U) B. Program Change Summary (\$ in Thousands):

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional Reductions

b. Bosnia supplemental

c. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

Total  
Cost  
Cont

FY 1997

3,640

3,717

FY 1998

0

FY 1999

0

-197

-5

-15

3,500

0

Cont

## (U) Change Summary Explanation:

Funding: Funding: FY97 below threshold reprogramming of \$15 thousand for Base Operations Support requirements at Eglin, Edwards and Arnold AFBs.

Schedule: None.

Technical: None.

(U) C. Other Program Funding Summary (\$ in Thousands): Not applicable.(U) D. Schedule Profile: Numerous minor construction requirements are executed each year. Detailed data available upon request.

Project 06MC

Page 17 of 19 Pages

Exhibit R-2 (PE 0605807F)

1171

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support

0605807F Test And Evaluation Spt

PROJECT

06MR

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
06MR Maintenance and Repair (3,4)	71,569	0	0	0	0	0	0	0	TBD

(1) Approximately 75% of FY98-03 content and funding for Maintenance and Repair, project 06MR, was transferred to PE 0605878F. This transfer provides better focus and alignment of resources for non-test, common base operations support functions at Arnold, Eglin and Edwards AFBs. The other 25% was identified specifically as test facility maintenance and repair requirements and was accordingly transferred to project 06TS.

(U) A. **Mission Description and Budget Item Justification:** This project provides essential Real Property Maintenance and Repair at three AFMC Bases whose host units are MRFB activities: Eglin AFB FL, Edwards AFB CA, and Arnold AFB TN. Physical plant maintained by this account covers 800,000 acres of land; over four thousand structures in excess of 30 years old encompassing fifteen million square feet; over five million square yards of airfield pavement; 1900 miles of road network; utility systems that include 120 wells, 10 sewage treatment plants, 20 substations and over 1600 miles of high voltage electrical distribution lines. Maintenance and Repair contracts for services or projects are awarded on the basis of full and open competition.

(U) FY 1997 (\$ in Thousands):

- (U) \$37,195 Financed in-house work force.  
 - (U) \$13,661 Repaired refrigerant insulation, rotor discs, gaseous helium refrigerators, heaters in air processing system and water control valves.  
 - (U) \$12,215 Repaired various roads, underground cable, HVAC (heating, ventilation and air conditioning), airfield pavement, electrical distribution lines, and asbestos abatement, seismic studies, and re-roof buildings.  
 - (U) \$8,498 Repaired "unsatisfactory" conditions as determined by the Commander's Facility Assessment.  
 - (U) \$71,569 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$0 Not applicable.

(U) FY 1999 (\$ in Thousands):

- (U) \$0 Not applicable.

Project 06MR

Page 18 of 19 Pages

Exhibit R-2 (PE 0605807F)

1172

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY			
6 - Management and Support		0605807F Test And Evaluation Spt	06MR
(U) B. <u>Program Change Summary (\$ in Thousands):</u>			
		FY 1997	FY 1998
(U) Previous President's Budget (FY 1998 PB)		72,557	0
(U) Appropriated Value		74,122	0
(U) Adjustments to Appropriated Value			
a. Congressional Reductions		-2,152	
b. Bosnia supplemental		-107	
c. Below Threshold Reprogramming		-294	
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 1999 President's Budget		71,569	0
			0
			Cont
(U) Change Summary Explanation:			
Funding: Funding: FY97 below threshold reprogramming of \$294 thousand for Base Operations Support requirements at Eglin, Edwards and Arnold AFBs.			
Schedule: None.			
Technical: None.			
(U) C. <u>Other Program Funding Summary (\$ in Thousands):</u> Not applicable.			
(U) D. <u>Schedule Profile:</u> Maintenance and repair of real property is level of effort and not tied to discrete start/end dates.			
Project 06MR		Page 19 of 19 Pages	Exhibit R-2 (PE 0605807F)



**THIS PAGE INTENTIONALLY LEFT BLANK**

**UNCLASSIFIED**

RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## February 1998

PE NUMBER AND TITLE

0605808F Development Planning

3361

[illegible]

(U) **A. Mission Description and Budget Item Justification**

This Program Element (PE) supports the Air Force Modernization Planning Process (MPP), which receives front-end guidance from Air Force long-range, strategic planning. Consistent with DoD 5000 series direction, the PE enables rigorous identification and substantiation of current/future operational deficiencies and needed capability, as well as associated migration plans. Such modernization planning efforts can be categorized according to three phases. First, a “strategies-to-task”, Mission Area Assessment (MAA) is conducted to identify operational tasks. These operational tasks must relate directly to currently assigned or future Air Force roles and missions as derived from a number of sources including the Air Force Vision and Strategic Plan. Second, a Mission Needs Analysis (MNA) is conducted to assess current and programmed force capabilities against operational tasks and ultimately identify specific deficiencies and needs. The third phase of the MPP is Mission Solution Analysis (MSA), which identifies potential cost effective, non-materiel (i.e. doctrine, tactics, training) and materiel alternatives that address the deficiencies/needs, or simply represent new organizational, operational, and/or technological opportunities. This program is in budget activity 6, Management Support, because supported studies and analyses provide inputs for Air Force Mission Area and/or Support Plans and future Air Force investment decisions. However, Phase 0 concepts studies and Analysis of Alternatives (AOAs) are not normally conducted in this program element.

**(U) Acquisition Strategy**

Annually, an Air Force-wide corporate board reviews, prioritizes, and screens proposed studies to ensure warfighter relevance and no unnecessary duplication of effort.

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3361

## 6 - Management and Support

## 0605808F Development Planning

## (U) FY 1997 (\$ in Thousands):

- (U) \$1,264	Continued surveillance and reconnaissance mission area study to identify architecture alternatives to support the battlefield commander.
- (U) \$427	Initiated analysis of the Aeromedical Evacuation mission and environment during contingency operations.
- (U) \$446	Continued effort to adapt existing air mobility modeling and simulation tools to distributed interactive simulation (DIS) standards to support mobility MAAs.
- (U) \$56	Continued effort to identify comprehensive measures of merit and effectiveness of space and missile systems to support analyses.
- (U) \$995	Developed analytical baseline of life cycle cost of ownership of weapon systems to support Air Combat Command's (ACC) mission area planning.
- (U) \$710	Performed study to support MNA for the Special Operations Forces Provide Mobility in Denied Territory mission area.
- (U) \$282	Provided assessment of deficiencies in various fleet mixes of intratheater airlift aircraft and the impact of the deficiencies on a campaign.
- (U) \$493	Continued effort to project sizing requirements for the communications pipeline to and from Air Mobility Command bases and deployed sites.
- (U) \$207	Performed analysis of combat identification architectures to address correlating off board sensor data with shooter on-board fire control data.
- (U) \$440	Initiated establishment of objective and quantifiable methodology to examine integrated warfighting concepts across ACC mission areas.
- (U) \$263	Developed a methodology to analyze and optimize airpower allocations within a theater campaign.
- (U) \$141	Developed a family of optimized mixes of space and missile systems/concepts over a 25-year horizon.
- (U) \$305	Identified and analyzed AF Medical Service casualty management requirements from future biowarfare or directed energy weaponry.
- (U) \$372	Continued Air Education and Training Command's (AETC) Training Throughput Model project.
- (U) \$6,401	Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$457	Complete study to support MNA for AF Special Operation Command's (AFSOC) Provide Mobility in Denied Territory mission area.
- (U) \$140	Initiate efforts to identify opportunities to streamline, consolidate, and automate AF Modernization Planning processes.
- (U) \$1,002	Continue surveillance and reconnaissance mission area study to identify architecture alternatives to support the battlefield commander.
- (U) \$1,119	Continue analysis of optimized space and missile capabilities, and force structure trades across all space mission areas.
- (U) \$653	Initiate analysis of integration and interdependencies of land and sea transportation to allow determination and optimal mix of mobility resources.
- (U) \$899	Continue efforts to base line and forecast operations and support, modernization and infrastructure costs for combat aircraft and training systems.
-	
-	
-	
- (U) \$4,270	Total

Project 3361

Page 2 of 4 Pages

Exhibit R-2 (PE 0605808F)

1176

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

6 - Management and Support

0605808F Development Planning

PROJECT

3361

## (U) FY 1999 (\$ in Thousands):

- (U) \$300 Continue efforts to identify opportunities to streamline, consolidate, and automate AF Modernization Planning processes.
- (U) \$1,400 Continue surveillance and reconnaissance mission area study to identify architecture alternatives to support the battlefield commander.
- (U) \$600 Continue analysis of optimized space and missile capabilities, including force structure trades, across all space mission areas
- (U) \$495 Continue to strengthen linkages between ACC mission area deficiencies and modernization investment.
- (U) \$410 Continue analysis of the Aeromedical Evacuation mission and environment during contingency operations.
- (U) \$2,870 Initiate/continue specific efforts in support of AF Modernization Planning.
- (U) Further definitization subsequent to FY 99 program spring review scheduled for February 1998.
- (U) \$6,075 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget (FY 1998) PB	6,194	6,049	6,197	
(U) Appropriated Value	6,531	4,549		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-185	-171		
b. SBIR	-152	-108		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming (BTR)	+218			
e. Recissions	-11			
(U) Adjustments to Budget Years Since FY 1998 PB			-122	
(U) Current Budget Submit/1999 President's Budget	6,401	4,270	6,075	Continuing

## (U) Change Summary Explanation:

Funding: FY97 BTR supports additional study efforts. FY 99 adjustment reflects revised inflation estimates.

Schedule: Not Applicable.

Technical: Not Applicable.

Project 3361

Page 3 of 4 Pages

Exhibit R-2 (PE 0605808F)

1177

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3361

## 6 - Management and Support

## 0605808F Development Planning

(U) C. Other Program Funding Summary (\$ in Thousands) None.

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U)									

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Execute projects	1 X	2 X	3 X	4 X	1 X	2 X	3 X	4 X	

Project 3361

Page 4 of 4 Pages

Exhibit R-2 (PE 0605808F)

1178

UNCLASSIFIED

PE NUMBER: 0605854F

PE TITLE: Pollution Prevention

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**6 - Management and Support****0605854F Pollution Prevention**

PROJECT

**1007**

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
1007 Pollution Prevention		19,723	9,251	1,673	2,600	2,615	2,751	2,818	Continuing	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

For FY97-98 this program element funds pollution prevention efforts required to accomplish the objectives and subobjectives of the Air Force Pollution Prevention Strategy to include installation level programs at Air Force Material Command Major Range and Test Facility bases (Eglin, Arnold, and Edwards AFBs) and cross-cutting weapons systems pollution prevention tools. It also funds efforts to validate and qualify environmentally acceptable materials and processes to replace existing common hazardous materials and processes. The account provides funds for Class 0 (recurring work to keep the gates open) and Class 1 (work required to eliminate dependence on ozone depleting chemicals, work to correct current non-compliance with federal, state or local environmental laws, and work required to satisfy pollution prevention Executive Orders). Typical services and projects include: eliminating ozone depleting chemicals and hazardous materials; reducing the generation of hazardous waste, air emissions, and solid wastes; establishing and operating recycling and composting programs; and establishing and operating hazardous material pharmacies and centralized hazardous material tracking programs.

Beginning in FY99, all funds for Test Facility base operations support (RDT&E) will be transferred to operations and maintenance. Remaining RDT&E funds will be used for development and test efforts to validate and qualify environmentally acceptable materials and processes to replace existing common hazardous materials and processes, cross-cutting weapons systems pollution prevention tools, and management and support costs in direct support of development efforts to meet compliance problems. This program is in Budget Activity 6, Management and Support, because most of the funding is directed toward support of test facilities required for general research and development use.

**(U) Acquisition Strategy:**

Funds for this PE are associated to many acquisition projects in other programs, thus acquisition strategy is not applicable.

Project 1007

Page 1 of 4 Pages

Exhibit R-2 (PE 0605854F)

1179

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT
6 - Management and Support		0605854F Pollution Prevention		1007
(U) FY 1997 (\$ in Thousands):				
-	(U) 662	Manpower and Education and Training		
-	(U) 1,396	Class 0 Projects: Opportunity assessments, contractor support, management action plan updates, computer support, hazardous material pharmacy supplies and equipment, and community awareness activities.		
-	(U) 356	Resource Conservation and Recovery Act (RCRA) Subtitle C - Hazardous Waste		
-	(U) 84	RCRA Subtitle D - Solid Waste		
-	(U) 251	Clean Air Act		
-	(U) 21	Clean Water Act		
-	(U) 1,277	Hazardous Material Reduction		
-	(U) 105	Other		
-	(U) 15,571	Class I Dem/Val Projects: Validation and qualification of commercially available material, equipment, and processes to support the Montreal Protocol and Air Force Pollution Prevention Strategy objectives and subobjectives in accordance with the Environmental Research and Development Strategic Plan. The demonstration/validation phase is system specific and includes advanced technology demonstrations that help expedite technology transition from the laboratory to operational use to meet compliance problems.		
-	(U) 19,723	Total		
(U) FY 1998 (\$ in Thousands):				
-	(U) 583	Manpower and Education and Training		
-	(U) 791	Class 0 Projects: Opportunity assessments, contractor support, management action plan updates, computer support, hazardous material pharmacy supplies and equipment, and community awareness activities.		
-	(U) 580	RCRA Subtitle C - Hazardous Waste		
-	(U) 245	RCRA Subtitle D - Solid Waste		
-	(U) 142	Clean Air Act		
-	(U) 192	Clean Water Act		
-	(U) 724	Hazardous Material Reduction		
-	(U) 3,084	Other		
-	(U) 2,910	Class I Dem/Val Projects: Validation and qualification of commercially available material, equipment, and processes to support the Montreal Protocol and Air Force Pollution Prevention Strategy objectives and subobjectives in accordance with the Environmental Research and Development Strategic Plan. The demonstration/validation phase is system specific and includes advanced technology demonstrations that help expedite technology transition from the laboratory to operational use to meet compliance problems.		
-	(U) 9,251	Total		
Project 1007				
Page 2 of 4 Pages				
Exhibit R-2 (PE 0605854F)				

1180

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605854F Pollution Prevention

1007

## (U) FY 1999 (\$ in Thousands):

(U) 294 RCRA Subtitle C - Hazardous Waste  
 (U) 197 RCRA Subtitle D - Solid Waste  
 (U) 294 Clean Air Act  
 (U) 100 Clean Water Act  
 (U) 688 Hazardous Material Reduction  
 (U) 100 Other

(U) 1,673 Class I Dem/Val Projects: Validation and qualification of commercially available material, equipment, and processes to support the Montreal Protocol and Air Force Pollution Prevention Strategy objectives and subobjectives in accordance with the Environmental Research and Development Strategic Plan. The demonstration/validation phase is system specific and includes advanced technology demonstrations that help expedite technology transition from the laboratory to operational use to meet compliance problems.

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget FY1998 PB	19,756	5,880	4,314	
(U) Appropriated Value	20,628	9,880		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-470	-441		
b. SBIR	-402	-188		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescission	-33			
f. Adjustments to Budget Years since FY1998 PB			-2,641	
(U) Current Budget Submit/1999 President's Budget	19,723	9,251	1,673	TBD

## (U) Change Summary Explanation:

Funding: A Congressional Add of \$4M in FY98 for an automated monitoring network demonstration for in-ground real-time monitoring of aquifers is included and is undergoing reclassification to O&M. Adjustments to FY99 include a transfer of all funds for Test Facility base operations support from RDT&E to O&M.

Schedule: Not Applicable

Project 1007

Page 3 of 4 Pages

Exhibit R-2 (PE 0605854F)

1181

UNCLASSIFIED



<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>																																																																																											
BUDGET ACTIVITY <b>6 - Management and Support</b>	PE NUMBER AND TITLE <b>0605854F Pollution Prevention</b>	PROJECT <b>1007</b>																																																																																											
<p>Technical: Not Applicable</p> <p>(U) <b>C. Other Program Funding Summary (\$ in Thousands)</b>      Not Applicable</p> <p>(U) <b>D. Schedule Profile</b> All funds except for the Congressional Add are associated with many projects in other acquisitions programs, thus management of project schedule is not accomplished within this PE. These funds are used to ensure pollution prevention applications are developed during other Air Force acquisition programs. The following schedule tracks the Congressional Add.</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th colspan="4">FY 1997</th> <th colspan="4">FY 1998</th> <th colspan="4">FY 1999</th> </tr> <tr> <th></th> <th>1</th><th>2</th><th>3</th><th>4</th> <th>1</th><th>2</th><th>3</th><th>4</th> <th>1</th><th>2</th><th>3</th><th>4</th> </tr> </thead> <tbody> <tr> <td>(U) Contract Award</td> <td></td><td></td><td></td><td></td> <td></td><td></td><td>X</td><td></td> <td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Site Monitoring Plan</td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td>X</td> <td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Sensor Testing</td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td>X</td> <td></td><td></td><td></td><td></td> </tr> <tr> <td>(U) Install Network</td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td> <td>X</td><td></td><td></td><td></td> </tr> <tr> <td>(U) Long-Term Monitoring</td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td> <td></td><td></td><td>X</td><td></td> </tr> </tbody> </table>				FY 1997				FY 1998				FY 1999					1	2	3	4	1	2	3	4	1	2	3	4	(U) Contract Award							X						(U) Site Monitoring Plan								X					(U) Sensor Testing								X					(U) Install Network									X				(U) Long-Term Monitoring											X	
	FY 1997				FY 1998				FY 1999																																																																																				
	1	2	3	4	1	2	3	4	1	2	3	4																																																																																	
(U) Contract Award							X																																																																																						
(U) Site Monitoring Plan								X																																																																																					
(U) Sensor Testing								X																																																																																					
(U) Install Network									X																																																																																				
(U) Long-Term Monitoring											X																																																																																		

PE NUMBER: 0605860F

UNCLASSIFIED

PE TITLE: Rocket System Launch Program (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
6 - Management and Support		0605860F Rocket System Launch Program (Space)								1023	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
1023	Reentry System Launch PGM (RSLP)	32,165	26,348	7,865	8,057	8,128	8,249	8,412	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**

(U) Rocket System Launch Program (RSLP) is tasked to provide Research, Development, Test and Evaluation (RDT&E) launch vehicle support to DoD and other government agencies using excess ballistic missiles assets. RSLP mission was established by the Secretary of Defense in 1972. It provides mission planning, payload integration, launch support, booster storage and disposal, maintenance and logistics support for selected DoD RDT&E launches. Costs directly attributable to a specific launch or program are paid by the user (Air Force, Navy, Army, Ballistic Missile Defense Organization (BMDO), etc.). RSLP directly supports deactivation of Minuteman II by providing storage of these and other assets. RSLP performs research and development support operations required for general rocket system launch research and development use.

(U) This program is in Budget Activity 6 - Management and Support because RSLP provides research and development effort and/or operations support for general research and development use.

(U) **Acquisition Strategy:**

(U) Storage, refurbishment, and aging surveillance are on-going activities using either the Air Force responsible logistics center or the Arizona Army National Guard. Funding provided via military interdepartmental purchase request and/or interservice support agreement.

(U) Flight tests will be conducted by exercising task orders on the competitively awarded RSLP Sounding Rocket Program contract.

(U) **FY 1997 (\$ in Thousands):**

- (U)	\$5,765	Continued storage and refurbishment of deactivated Minuteman and other missile flight test assets.
- (U)	\$2,000	Performed aging surveillance-related activities on stored motors; performed analyses/studies to identify and evaluate potential safety-related issues affecting stored motors.
- (U)	\$24,184	Initiated development of atmospheric interceptor technology, plasma attenuation, and materials demonstration flight testing for BMDO.
- (U)	\$216	Other
- (U)	\$0	Provided launch assets and technical assistance for DoD RDT&E launches. (Funded by users.)
- (U)	\$32,165	Total

Project 1023

Page 1 of 3 Pages

Exhibit R-2 (PE 0605860F)

1183

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
1023

6 - Management and Support  
0605860F Rocket System Launch Program  
(Space)

(U) FY 1998 (\$ in Thousands):

- (U) \$6,013 Continued storage and refurbishment of deactivated Minuteman and other missile flight test assets.  
 - (U) \$2,000 Continued performing aging surveillance-related activities on stored motors; continued performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors.  
 - (U) \$18,152 Continued development of atmospheric interceptor technology (AIT).  
 - (U) \$183 Funding set aside for pending reprogramming to fund higher priorities.  
 - (U) \$0 Continued providing launch assets and technical assistance for DoD RDT&E launches. (Funded by users.)  
 - (U) \$26,348 Total

(U) FY 1999 (\$ in Thousands):

- (U) \$6,023 Continue storage and refurbishment of deactivated Minuteman and other missile flight test assets.  
 - (U) \$1,842 Continue performing aging surveillance-related activities on stored motors; continue performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors.  
 - (U) \$0 Continue providing launch assets and technical assistance for DoD RDT&E launches. (Funded by users.)  
 - (U) \$7,865 Total

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 1998 PB)	32,218	8,013	8,023	Continuing
(U) Appropriated Value	33,252	28,013		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-705	-1,006		
b. SBIR	-329	-659		
c. Omnibus or Other Above Threshold Reprogram	0	0		
d. Below Threshold Reprogramming	-53	0		
e. Rescissions			-158	
(U) Adjustments to Budget Years Since FY 1998 PB			7,865	Continuing
(U) Current Budget Submit/FY 1999 President's Budget	32,165	26,348		

Project 1023

Page 2 of 3 Pages

Exhibit R-2 (PE 0605860F)

1184

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																																																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																					
6 - Management and Support	0605860F Rocket System Launch Program (Space)	1023																																																					
<p>(U) Change Summary Explanation:</p> <p>Funding: Congress added \$20,000 to FY98 PB request to support AIT Program. Reductions in FY99 and beyond to offset higher Air Force and DOD needs.</p> <p>Schedule: No significant impact.</p> <p>Technical: An additional flight test added in FY99 to support AIT.</p>																																																							
<p>(U) C. <u>Other Program Funding Summary (\$ in Thousands):</u> None.</p>																																																							
<p>(U) D. <u>Schedule Profile:</u></p> <table border="0"> <thead> <tr> <th></th> <th colspan="2">FY 1997</th> <th colspan="2">FY 1998</th> <th colspan="2">FY 1999</th> <th></th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr> <td>(U) Storage/Refurbishment</td> <td></td> <td></td> <td></td> <td></td> <td>4</td> <td>1</td> <td>3</td> <td>4</td> </tr> <tr> <td>(U) Aging Surveillance</td> <td></td> <td></td> <td></td> <td></td> <td>On-Going</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Flight Tests</td> <td></td> <td></td> <td></td> <td></td> <td>On-Going</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td></td> <td>X</td> <td>X</td> </tr> </tbody> </table> <p>* Started and/or Completed</p>					FY 1997		FY 1998		FY 1999				1	2	3	4	1	2	3	(U) Storage/Refurbishment					4	1	3	4	(U) Aging Surveillance					On-Going				(U) Flight Tests					On-Going									X		X	X
	FY 1997		FY 1998		FY 1999																																																		
	1	2	3	4	1	2	3																																																
(U) Storage/Refurbishment					4	1	3	4																																															
(U) Aging Surveillance					On-Going																																																		
(U) Flight Tests					On-Going																																																		
					X		X	X																																															

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0605864F

UNCLASSIFIED

PE TITLE: Space Test Program (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
DATE February 1998									
PROJECT 2617									
PE NUMBER AND TITLE									
0605864F Space Test Program (Space)									
BUDGET ACTIVITY									
6 - Management and Support									
COST (\$ In Thousands)									
	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2617 Free-Flyer Spacecraft Missions	0	0	45,933	55,099	56,520	53,580	55,357	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

Note: This is not a new start. Space Test Program (Space) PE 0603402F changes to PE 0605864F in FY99. Prior year funding is in PE 0603402F.

**(U) A. Mission Description and Budget Item Justification**

(U) The Space Test Program (STP) provides support to the DoD space research community by centrally financing acquisition of a host satellite or launch vehicle, the launch, and initial operations costs for experiments with military relevance whose scope ranges from basic research to advanced development. STP missions are the most cost effective way to flight test new space systems technologies, concepts and designs, providing an inexpensive way to:

- Demonstrate the feasibility of new space systems and technologies
- Improve operational design by characterizing the space environment, event, or sensor physics proposed for an operational system/system upgrade
- Provide early operational capabilities to evaluate usefulness or quickly react to new developments
- Perform operational risk reduction through direct flight test of prototype components
- Develop the knowledge base from which to plan new and improved operational systems and system upgrades
- Develop and test advanced small launch vehicle technology and capabilities

This DoD program provides the primary spaceflight capability to perform fly-before-buy, risk-reducing demonstrations of advanced technologies in operational space environments. The Secretary of Defense issued a policy statement in November 1995 reaffirming STP's role as the primary provider of spaceflight for the entire DoD space research community. Space Test Program is a Budget Activity 6 RDT&E Management and Support program.

**(U) Acquisition Strategy**

(U) The space research experiments that STP supports are justified, developed, financed, and delivered by various Service laboratories and DoD agencies, with the goal of improving DoD's current and future operational space systems' performance. Experiments are considered for spaceflight based on the priority that they are assigned by the annual DoD Space Experiments Review Board, a group that is independent of the STP Program Office, and is comprised of Air Force, Army, Navy, BMDO and other representatives with expertise in DoD operational space requirements. The Board gives the prioritized list of experiments to STP, who then seeks out the most cost effective means of spaceflight to maximize the number of experiments flown within the constraints of priority, opportunity and available funding. The most common spaceflight opportunities include piggybacking on military or commercial satellites, both foreign and domestic, and the various payload modes of the Space Shuttle. For those experiments whose requirements cannot be satisfied with these "secondary" opportunities, dedicated STP spacecraft and launch vehicle hardware are procured within the constraints of available funding and according to experiment requirements. These include Small and Medium Launch Vehicle class satellites, as well as Small Launch Vehicle class boosters (such as Pegasus, Taurus, and Lockheed Martin Athena). Medium Launch Vehicle class boosters are provided as required by PE 35119F and PE 35953F. If a particular manifested experiment fails to materialize or is deemed impractical to fly given current

Project 2617

Page 1 of 3 Pages

Exhibit R-2 (PE 0605864F)

1187

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605864F Space Test Program (Space)

2617

funding, or if the appropriate spaceflight opportunity becomes unavailable, STP shifts what resources remain to provide spaceflight support for the next highest priority experiments.

(U) The Air Force requires a stable funding level and the flexibility necessary to take advantage of whatever means of spaceflight is deemed to be most cost effective for a given experiment or complement of experiments. This flexibility is essential to take advantage of inexpensive "target of opportunity" space hardware, including operational spacecraft, where margin is usually firmly identified during the later stages of spacecraft development. This assures that the greatest amount of DoD space research is accomplished with the limited funds available. Without the requested funding, DoD would lose its most successful and most cost-effective capability to launch and test new technologies prior to their incorporation into our nation's very expensive and demanding operational space systems. Insufficient funding would also force each of the Services and DoD agencies to create individual launch capabilities in an attempt to duplicate STP's current low-cost, risk mitigating capability. Such a redundancy would result in the loss of the contractual economy of scale that a single space test organization provides, as well as the filtering function of the DoD Space Experiments Review Board in assuring quality experiments and minimum duplication.

## (U) FY 1999 (\$ in Thousands)

-	(U) \$ 8,815	Piggyback/secondary payload missions; mission planning, Aerospace Corp support, mission and program support.
-	(U) \$ 3,500	Space Shuttle payload engineering, analysis, pre- and post-launch processing, and launch support.
-	(U) \$26,149	Begin dedicated STP EELV mission (RAIDS, WINDSAT, and ISUS satellites, etc.); TSX-5 and ARGOS ops; reusable upper stage/bus development
-	(U) \$ 7,469	Continue JAWSAT and MTI Taurus Launch Vehicle development.
-	(U) \$45,933	Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	0	0	0	Continuing
(U) Appropriated Value				
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions				
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescission				
(U) Adjustments to Budget Years Since FY1998 PB			45,933	
(U) Current Budget Submit/FY1999 President's Budget	0	0	45,933	Continuing

Project 2617

Page 2 of 3 Pages

Exhibit R-2 (PE 0605864F)

1188

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

0605864F Space Test Program (Space)

2617

(U) Change Summary Explanation:

Funding: Space Test Program (Space) PE 0603402F changes to PE 0605864F in FY99. Prior year funding is in PE 0603402F.

Schedule: STP EELV mission moved from FY01 to FY02.

Technical: Not Applicable.

(U) C. Other Program Funding Summary (\$ in Thousands):  
Not Applicable.Related RDT&E:

- (U) PE 0305119F, Medium Launch Vehicles
- (U) PE 0305953F, Evolved Expendable Launch Vehicle
- (U) PE 0603402F, Prior year STP funding

Experiments are funded by many Science and Technology (S&amp;T) PEs in Air Force, Army, Navy, DARPA, BMDO, DoE, NASA, and other programs.

(U) D. Schedule Profile These are anticipated launch dates. (Current projection. Experiments are added as new spaceflight opportunities and budget permits).

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) STS-93* STL-B, CCM-A, MSX, LFSAH, SIMPLEX, MEMS								X	
(U) STS-95* CRYOTSU, MSX, MEMS, CCM-A, PANSAT, SIMPLEX, TASBE								X	
(U) TSX-5 - STRV II, CEASE (P95-2)						X			
(U) PICOSAT - PBEX, IOX, CERTO, OPPEX (P97-1)*							X		
(U) CEASE (STRV1 C/D) (S97-1)*								X	
(U) CERTO PLUS (STRV1 C/D) (S97-2)*								X	
(U) POGS-II (S92-1)									X
(U) JAWSAT (TYANOS, IOX, CERTO)*									X

\*New spaceflight opportunity since FY98PB.

Project 2617

Page 3 of 3 Pages

Exhibit R-2 (PE 0605864F)

1189

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 1001004F  
PE TITLE: International Activities

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
6 - Management and Support		1001004F International Activities									
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		3,548	3,591	3,752	3,818	3,880	3,936	3,982	Continuing	TBD	
0AH *Shape Tech Center-VKI-ICRD Sup		3,548	0	0	0	0	0	0	0	0	
4645 *International Cooperative Research & Development		0	3,591	3,752	3,818	3,880	3,936	3,982	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

\*The BPAC title was changed and a new project number assigned for administrative purposes to accurately reflect the nature of work being accomplished. FY97 and prior funding is reflected in BPAC Project 00AH, FY98 and outer years have been reassigned to BPAC Project 4645.

(U) A. Mission Description and Budget Item Justification

The mission of this program is to gain access to our allies best defense technologies, eliminate costly duplication of research and development efforts, accelerate availability of defense systems, and to deploy and sustain common or interoperable USAF and Allied equipment through international cooperative research and development.

The USAF is party to multiple international cooperative agreements to solve common US and Allied military scientific and technological problems and to develop materiel solutions to harmonize coalition requirements. This program funds the Department of the Air Force to support, develop, process, negotiate, implement, and manage these international cooperative agreements and projects in compliance with statutory reporting provisions and exacting legal statutes, fiscal constraints, technology transfer controls, intellectual property rights, third party transfer provisions, quid-pro-quo criteria, industrial base factors, and political-military interests. Included in this budget are domestic and international technology assessment teams; specialized working groups; long-term technology project developments; support for cooperative opportunity assessments; developing, processing, and negotiating international agreements; oversight of International Cooperative Research and Development (ICR&D) projects; overseas R&D liaison and coordination offices; bilateral and multilateral staff talks; and the Engineering and Scientist Exchange Program (ESEP). Funds US participation in the NATO Air Force Armaments Group (NAFAG) and NATO Research and Technology (RTO). This program is in Budget Activity 6, Management and Support, because it provides for general Research & Development Management support for all aspects of International Research & Development in the USAF.

(U) Acquisition Strategy:

This program element is the only source of USAF funds to identify and initiate opportunities for international armament's cooperation to (a) deploy and support common or interoperable equipment with our allies; (b) leverage USAF resources with our allies through cost sharing and economies of scale; and (c) exploit the best US and allied technologies for equipping coalition forces. We obtain these benefits only after international cooperative opportunities are identified, explored, developed, assessed and negotiated and concluded. This program element provides funds to execute up-front armaments cooperation

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

1001004F International Activities

responsibilities, rationalize cooperative opportunities, assess allied technologies, and generate sound, cost-effective cooperative programs between the USAF and our international partners. Once these initiatives and programs are started as international efforts they are transferred to the appropriate technology or systems program office and are funded in their own program elements.

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total</u> <u>Cost</u>
(U) Previous President's Budget	3,554	3,715	3,827	
(U) Appropriated Value	3,633	3,715		
(U) Adjustments to Appropriated Value				
a. Congressional Reductions	-76	-121		
b. SBIR	-3	-3		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Recission	-6			
(U) Adjustments to Budget Years Since FY 1998 PB			-75	
(U) Current Budget Submit/President's Budget	3,548	3,591	3,752	

## (U) Change Summary Explanation:

Funding: NA

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands)

<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u> <u>Compl</u>	<u>Total</u> <u>Cost</u>

(U) N/A

(U) D. Schedule Profile

(U) See Individual Projects

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 6 - Management and Support

PE NUMBER AND TITLE

1001004F International Activities

PROJECT

OAH

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
OAH *Shape Tech Center-VKI-ICRD Sup	3,548	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification

The mission of this program is to gain access to our allies best defense technologies, eliminate costly duplication of research and development efforts, accelerate availability of defense systems, and to deploy and sustain common or interoperable USAF and Allied equipment through international cooperative research and development.

The USAF is party to multiple international cooperative agreements to solve common US and Allied military scientific and technological problems and to develop materiel solutions to harmonize coalition requirements. This program funds the Department of the Air Force to support, develop, process, negotiate, implement, and manage these international cooperative agreements and projects in compliance with statutory reporting provisions and exacting legal statutes, fiscal constraints, technology transfer controls, intellectual property rights, third party transfer provisions, quid-pro-quo criteria, industrial base factors, and political-military interests. Included in this budget are domestic and international technology assessment teams; specialized working groups; long-term technology project developments; support for cooperative opportunity assessments; developing, processing, and negotiating international agreements; oversight of International Cooperative Research and Development (ICR&D) projects; overseas R&D liaison and coordination offices; bilateral and multilateral staff talks; and the Engineering and Scientist Exchange Program (ESEP). Funds US participation in the NATO Air Force Armaments Group (NAFAG) and NATO Research and Technology Organization (RTO).

## (U) FY 1997 (\$ in Thousands):

- (U) \$110 NATO C3 Agency (formerly Shape Technical Center) - Funded US R&D coordination office and administrative support to US engineering and technical professionals assigned to the NATO C3 Agency.
- (U) \$253 ESEP - Funded the management oversight of the Engineer and Scientist Exchange Program.
- (U) \$500 NATO Research & Technology Organization (RTO, formerly AGARD) - Fully funded US national-level representation to the NATO R&T Board. Funded technical experts from Air Force field-level, US industry, and universities to support 7 technical panels, 21 working groups, 3 study groups, and 1 study committee sponsored by NATO RTO. FY97 program of work as endorsed by US National Delegates and approved by the AGARD National Delegates Board and NATO Military Committee included: (1) Injury Prevention In Aircraft Crashes: Investigative Techniques and Applications, (2) Manned Combat Aircraft Fleet-Long Term Implications, (4) Helicopter/Weapon System Integration, (5) Fully Automated Conduct Air Traffic Management, (6) Strategic Management of the Cost Problem of Future Weapon Systems, (7) Advanced Non-Intrusive Instrumentation for Propulsion Engines, (8) Multisensors Systems and Data Fusion for Telecommunications, Remote Sensing and Radar, (9) System Design Considerations for Unmanned Tactical Aircraft, (10) Sustained Hypersonic Flight: From Demonstration to Applications, (11) Propulsion, (12) Critical Technology Advances in Military Aerospace Support Systems, (13) Operational Enhancements via Human System Technologies. Continued Partnership for Peace initiative through the NATO RTO outreach program incorporating new scientist and engineers from Central Europe.

Project OAH

Page 3 of 13 Pages

Exhibit R-2 (PE 1001004F)

1193

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>6 - Management and Support</b>	<b>1001004F International Activities</b>	<b>February 1998</b>	<b>0AH</b>
- (U) \$268	<p>AFIPSA - Fully funded AFIPSA and USAF to reduce the backlog of proposals for International Cooperative R&amp;D Agreements. The following is a list of agreements that were signed in FY97: <b>Australia:</b> Adaptive Flexible Structures for Air Vehicle Application, GPS Ionospheric Scintillation Monitors, MOU for Loan of TASLU Phase II Aircraft Cargo; <b>Four Powers:</b> Aircraft Armament Avionic Agility, Post-2020 Armament Concepts and Technologies, Tactical Missile Propellants (Rev.1), Aircraft Battle Damage Repair (Rev. 1); <b>France:</b> Reliability of Electronic Components and Equipment; <b>Germany:</b> Free Piston Shock Tunnel, Optical Properties of the Environment; <b>Israel:</b> Strengthening of Concrete Structures for Enhanced Structural Survivability, Construction and Engineering in the Air Force, Diagnostics of Chemical Oxygen-Iodine Lasers; <b>Japan:</b> Aerodynamic Test Technology; <b>Poland:</b> Aircrew Simulation &amp; Performance; <b>Russia:</b> Cooperate in Installing and Operating Seismic Stations for Monitoring Nuclear Weapons Tests; <b>Sweden:</b> Technology Research &amp; Development Project; <b>United Kingdom:</b> Dense Metal Case Penetrating Weapon; Aftbody/Nozzle Aeroacoustics Project; Programmable Integrated Ordinance Suite; Penetration, Target Acquisition and Attack Technologies for Air Vehicles; Tactical Imagery Data Management and Exploitation; Atlas Aircraft Cargo Loader.</p> <p><b>ICR&amp;D</b> - Funded USAF overseas R&amp;D liaison offices. Funded management support and oversight of USAF Foreign Comparative Test Program and NATO Cooperative R&amp;D Program. Funded USAF participation at the NATO Four-power Council, NAFAG, and its six subgroups to promote NATO harmonization of requirements, standardization, and new cooperative R&amp;D programs. Funded USAF participation at the US-Japan Systems and Technology Forum it's four sub-groups and international C.A.L.S. Funded expanded technology acquisition contacts and follow-on cooperative opportunities with Russia, Ukraine, and Eastern Europe. Partially funded technical assessments and international agreements negotiation start-up costs associated with promising cooperative R&amp;D programs. This PE also funded preliminary and negotiation costs associated with USAF NATO cooperative R&amp;D funded programs. Funded support for the NATO AWACS Board of Directors and the Air Force Technology Booth at International Forums.</p> <p><b>AFMC</b> - Fully funded Air Force Material Command activities to identify, assess, and develop support packages and project arrangements as required by statute for the above cited new candidate agreements. Funded Material Command initiatives and technical support to the Chair of the NAFAG. Supported Material Command activities for USAF Foreign Comparative Test and NATO Cooperative R&amp;D Programs. Funded USAF participation in panel meetings of the Technical Cooperation Program, Air Standardization Coordinating Committee, Standard NATO Agreements Working Groups, and NATO Alliance Ground Surveillance Program Office. Funded exploratory visits to France, Germany, Israel, United Kingdom and other countries on new technology exchange projects. Funded the International Focal Point Offices program offices at centers and laboratories in identifying, creating and staffing new international cooperative agreements. Funded the support, management and documentation of all of the above ICR&amp;D efforts.</p>		
- (U) \$1,183			
- (U) \$1,234			
- (U) \$3,548			
<b>(U) B. Program Change Summary (\$ in Thousands)</b>			
(U) Previous President's Budget	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	3,554		
(U) Adjustments to Appropriated Value	3,633		
Project 0AH			
		Total	Cost

Exhibit R-2 (PE 1001004F)

Page 4 of 13 Pages

1194

UNCLASSIFIED



**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
6 - Management and Support		0AH	
PE NUMBER AND TITLE		1001004F International Activities	
		FY 1997	
		1	2 3 4
-Data/Information Exchange Annexes		X	X X X
-Engineer and Scientist Exchanges		X	X X X
-NATO Air Force Armaments Group		X	X X X
-Four-Power Air Senior National Representatives		X	X X
-Four-Power Long-Term Technology Working Group			X X

Project 0AH

Page 6 of 13 Pages

Exhibit R-2 (PE 1001004F)

Project 0AH

Page 6 of 13 Pages

1196

**UNCLASSIFIED**

Exhibit R-2 (PE 1001004F)

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 6 - Management and Support

PE NUMBER AND TITLE

## 1001004F International Activities

PROJECT

4645

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4645 *International Cooperative Research & Development	0	3,591	3,752	3,818	3,880	3,936	3,982	Continuing	TBD

\*FY97 and prior year funding is reflected in BPAC Project 00AH. The BPAC title was changed and a new Project Number assigned for administrative purposes to more actively reflect the nature of work being accomplished.

**(U) A. Mission Description and Budget Item Justification**

The mission of this program is to gain access to our allies best defense technologies, eliminate costly duplication of research and development efforts, accelerate availability of defense systems, and to deploy and sustain common or interoperable USAF and Allied equipment through international cooperative research and development.

The USAF is party to multiple international cooperative agreements to solve common US and Allied military scientific and technological problems and to develop materiel solutions to harmonize coalition requirements. This program funds the Department of the Air Force to support, develop, process, negotiate, implement, and manage these international cooperative agreements and projects in compliance with statutory reporting provisions and exacting legal statutes, fiscal constraints, technology transfer controls, intellectual property rights, third party transfer provisions, quid-pro-quo criteria, industrial base factors, and political-military interests. Included in this budget are domestic and international technology assessment teams; specialized working groups; long-term technology project developments; support for cooperative opportunity assessments; developing, processing, and negotiating international agreements; oversight of International Cooperative Research and Development (ICR&D) projects; overseas R&D liaison and coordination offices; bilateral and multilateral staff talks; and the Engineering and Scientist Exchange Program (ESEP). Funds US participation in the NATO Air Force Armaments Group (NAFAG) and NATO Research and Technology Organization (RTO).

This program element funds general R&D management for all USAF international cooperative R&D. This includes management support and execution of projects in (1) Basic Research (2) Concept Exploration (3) Demonstration and Validation and (4) Engineering and Manufacturing Development. Consequently, this program is in Budget Activity 6.

**(U) Acquisition Strategy:**

This program element is the only source of USAF funds to identify and initiate opportunities for international armament's cooperation to (a) deploy and support common or interoperable equipment with our allies; (b) leverage USAF resources with our allies through cost sharing and economies of scale; and (c) exploit the best US and allied technologies for equipping coalition forces. We obtain these benefits only after international cooperative opportunities are identified, explored, developed, assessed and after the international agreements are negotiated and concluded. This PE provides funds to execute up-front armaments cooperation responsibilities, rationalize cooperative opportunities, assess allied technologies, and generate sound, cost-effective cooperative programs between the USAF and our international partners. Once these initiatives and programs are started as international efforts they are transferred to the appropriate technology or systems program office and are funded in their own program elements.

Project 4645

Page 7 of 13 Pages

Exhibit R-2 (PE 1001004F)

1197

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
6 - Management and Support	1001004F International Activities		4645
(U) FY 1998			
- (U) \$110	NATO C3 Agency - Funds the US R&D Coordination Office and administrative support for the assigned US Engineering and Technical professionals and cooperative research and development activities assigned to the C3 Agency.		
- (U) \$253	ESEP - Funds the Air Force execution and the management oversight of the Engineer and Scientist Exchange Program (ESEP). Funds approximately nine field level military and civilian scientists from Air Force Research Laboratory, in two year tours at selected European and Asian Government Research Laboratories or other Technical Institutions. ESEP Memoranda of Understanding are expected to be in place with 16 countries.		

Project 4645

Page 8 of 13 Pages

Exhibit R-2 (PE 1001004F)

1198

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

## 1001004F International Activities

4645

- (U) \$268

AFIPSA - Fully funds AFIPSA and USAF to reduce the backlog of proposals for International Cooperative R&D Agreements. The following is a list of proposed candidate agreements that will be either signed or under development in FY98: **Argentina:** Seismic and Infrasonic Monitoring Agreement, **Australia:** Air Breathing Propulsion Technology, Project Refractive Turbulence, Navigation Warfare, Aging Aircraft Life Prediction/Extension, High Altitude Endurance Unmanned Aerial Vehicle Cooperative Development and Technical Demonstration, **Bolivia:** Seismic Monitoring Agreement; **Botswana:** Seismic Monitoring Agreement; **Brazil:** Ionospheric Experiments, ESEP, External Stores Flight Testing Methods and Techniques, Seismic and Infrasonic Monitoring Agreement; **Central African Republic:** Seismic Monitoring Agreement; **Chile:** Ionospheric Research Project, Infrasonic Monitoring Agreement; **China:** Seismic Monitoring Agreement; **Cote D'Ivoire:** Seismic Monitoring Agreement; **Egypt:** Seismic Monitoring Agreement, TRDP; **Ethiopia:** Seismic Monitoring Agreement; **Four Powers:** Tactical Laser Hardened Materials, Beyond Visual Range Air-to-Air Missile, Technologies for Airlift Cargo Handling, Supermaneuverability, Precision Airdrop Improvements; **France:** Effects of the Ionosphere on Communications and Surveillance Systems, Cooperative Development and Evaluation of Ducted Rockets, Advanced Oscillators, Long Range Missile Guidance Inertial Sensors, Advanced Resonators and Oscillators, Advanced Combustor Chamber Concepts Program, Integrated Tactical Aircraft Control Program; **Germany:** Observations and Modeling for Space Weather, Cooperative Space Measurements, Wind Tunnels and Flight Simulation Facilities, ESEP, Infrasonic Monitoring Agreement; **Israel:** External Composite Concrete Reinforcement for Enhanced Structural Survivability, Continuous Wave Solar Pumped IBR Laser; **Italy:** TRDP; **Japan:** ESEP, Advanced Hybrid Tactical Propulsion, ACES-II Ejection Seat Improvements, Robotics; **Kazakhstan:** Seismic Monitoring Agreement; **Korea:** Seismic Monitoring Agreement, Modeling and Simulation of Multichip Avionics; **Morocco:** Seismic Monitoring Agreement; **NATO/Multilateral:** Exchange of Research & Development Information, Subminiature Data Acquisition and Telemetry Systems, Joint Airborne Navigation and Attack Technology Demonstration Program, Joint Strike Fighter Requirement Validation Cooperation, NATO AEW&C Mid-term Modernization, NATO Joint Stars Cooperative Acquisition Program, Environmental Effects of Component & Equipment Reliability, Air Command/ Control/Communication and Intelligence Capabilities, Trilateral Technology R&D Program, Multiple Warhead System, Effects on Global Positioning Systems, Agent Defeat Weapon; **Namibia:** Infrasonic Monitoring Agreement; **The Netherlands:** Anthropometric Accommodation in Crew Systems; **New Zealand:** Infrasonic Monitoring Agreement; **Norway:** ESEP; **Oman:** Seismic Monitoring Agreement; **Pakistan:** Seismic Monitoring Agreement; **Paraguay:** Seismic Monitoring Agreement; **Poland:** ESEP; **South Africa:** Seismic Monitoring Agreement; **Sweden:** Automatic Ground Collision Avoidance for Fighter Aircraft, Administrative and Professional Exchange Program; **Turkey:** Seismic Monitoring Agreement; **Turkmenistan:** Seismic Monitoring Agreement; **United Kingdom:** Air Worthiness of Aging Aircraft, Non-Acoustic Technologies, Aero Engine Altitude Testing, Development and Production of a Directional Infrared Countermeasures System, Weather Impact Decision Aids, Cosmic Radiation Environment and Activation Monitor, Air Battle Management, Metal Matrix Composites for Aerospace Applications, Joint Development and Evaluation of Electro-Optic Protection Measures, Active Control Technology and Aircraft Flying Qualities for Military Aircraft, Flight Simulation of Combat Aircraft Sensors, Visual Scenes, and Motion, Covert All Weather Landing Guidance Technology.

Project 4645

Page 9 of 13 Pages

Exhibit R-2 (PE 1001004F)

1199

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

## 1001004F International Activities

4645

- (U) \$500 NATO Research & Technology Organization - Funds US National Delegates participation in the NATO R&T Board and USAF, industry, and academia participation in the RTO aerospace related panel activity. The FY98 program of work will consist of studies, technical exchanges, and reports in the following areas: (1) Presentation of the Probable Changes in Information Management and Technology, (2) Hypersonic Experimental and Computational Capabilities, (3) Aeromedical Support issues in Contingency Operations, (4) Advanced Aerodynamic Measurement Technology, (5) Virtual Manufacturing, (6) Numerical Unsteady Aerodynamics and Aeroelastic Simulation, (7) Thermal Barrier Coatings, (8) Advances in Soft Computing Technologies Application in Mission Systems, (9) Effect of Rain, Icing and Deicing Systems on Wing Performance, (10) Turbulence in Compressible Flows, (11) Flight Test Instrumentation, (12) Current Concepts and New Developments in Impact and Escape System Dummy Specifications and Instrumentation, (13) Structural Optimization. Continues Partnership for Peace initiative through the R&T outreach program incorporating new scientists and engineers from Central Europe.

- (U) \$1,040 ICR&D - Funds USAF overseas R&D liaison offices. Funds management support and oversight of USAF Foreign Comparative Test Program and NATO Cooperative R&D Program. Funds USAF participation at the NATO Four-power Council, NAFAG, and its six subgroups to promote NATO harmonization of requirements, standardization, and new cooperative R&D programs. Funds USAF participation at the US-Japan Systems and Technology Forum, its four sub-groups and the USAF participation in international CALS. Funds expanded technology acquisition contracts and follow-on cooperative opportunities with Russia, Ukraine, and Eastern Europe. Partially funds technical assessments and international agreements negotiation start-up costs associated with promising cooperative R&D programs. Funds preliminary and negotiation costs associated with USAF AWACS NATO cooperative R&D funded programs and support for the NATO AWACS Board of Directors.

- (U) \$1,420 AFMC - Fully funds Air Force Materiel Command activities to identify, assess, develop and report International Cooperative Agreements as required by statute for new and existing projects. Supports Materiel Command activities for the USAF Foreign Comparative Test, and NATO Cooperative R&D Programs. Funds USAF participation in panel meetings of the Technical Cooperation Program, Air Standardization Coordinating Committee, Standard NATO Agreements Working Groups, and other NATO forums. Funds periodic bilateral meetings to define new areas of possible cooperation, and exploratory visits to France, Germany, Israel, United Kingdom, Canada, and other countries on new technology exchange projects. Funds the project engineers at centers and Air Force Research Laboratory (AFRL) in identifying, creating and staffing new international cooperative agreements. Funds MAJCOM staff to support and promote international research and development cooperation throughout AFMC. Funds support for the Air force Technology Booth at International Forums. Funds small contracts in support of technology initiatives. This program will, in addition, fund the support, management and documentation of these ICR&D efforts.

- (U) \$3,591

- (U) FY 1999

- (U) \$110

- (U) \$253

NATO C3 Agency - Funds the US R&D Coordination Office and administrative support for the assigned US Engineering and Technical professionals and cooperative Research and Development activities assigned to the NATO C3 Agency.

ESEP - Funds the Air Force execution and the management oversight of the Engineer and Scientist Exchange Program (ESEP). Funds approximately nine field level military and civilian scientists from Air Force Research Laboratory, Product Centers, Test Centers and Air Logistics Centers in two year tours at selected European and Asian Government Research Laboratories or other Technical Institutions. ESEP Memoranda of Understanding are expected to be in place with 18 countries.

Project 4645

Page 10 of 13 Pages

Exhibit R-2 (PE 1001004F)

1200

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 6 - Management and Support

## 1001004F International Activities

4645

- (U) \$269 AFPSA - Fully funds AFPSA and USAF to reduce the backlog of proposals for International Cooperative R&D Agreements. Work will continue on agreements developed during FY98 but not signed and work will be initiated on the following and other new agreements: **Australia:** Data Fusion for over the Horizon Radar, Detection and Tracking of Targets in Clutter, Structural Integrity of Aging Aircraft, Air C3I Capabilities, Virtual Air Commander; **Germany:** High Energy Laser Technology (COIL); **Israel:** Non-Linear Frequency Conversion Materials, Thulium Holmium Energy Transfer Modeling; **Italy:** Real-Time Information in the Cockpit; **Korea:** 3D Microwave Monolithic Integrated Circuits; **NATO/Multilateral:** C-130 Integrated Data Environment, Coalition Command Control and Communications Environment, Joint Airborne Navigation and Attack (JOANNA) II; **United Kingdom:** Effects of Ionization of Hydrocarbon-Air combustion, Effects of Meteor Metals on Communication and Guidance, PIOS Phase II/III, Mass and Performance Estimation Methodology, Turbine Engine Technology, Wind Tunnel Testing.
- (U) \$250 **NATO Research and Technology Organization:** Funds USAF participation in the NATO Research and Technology Board and RTO panel activity. The FY99 program of work will consist of studies, technical exchanges, and reports in the following areas: (1) Computational Unsteady Aerodynamic Codes, (2) Multi-facility Wind Tunnel Testing for CFD Validation, (3) Deterministic Spectral Gust Methods, (4) Screening Protocol for Aeromedical Medications, (5) Human Consequences of Supergravity, (6) Aeromedical Lessons from Acceleration and Positive Pressure Breathing Research, (7) Aircraft Weapon Compatibility, (8) Flight Control Law Development, (9) Ice Accretion and Simulation Evaluation test, (10) Nonlinear Stability and Transition of Swept-Wing Boundary layers, (11) Sensor data Fusion and Integration of Human Element, (12) Integrated Mission Systems Concepts, (13) Gas Turbine Engine Combustion, Emissions and Alternative Fuels, (14) Aging and Surveillance of Solid Gun Propellants, (15) Frequency Assignment, Sparing and Conservation. Continues Partnership for Peace initiative through the R&T outreach program with scientists and engineers from the Former Soviet Union and Central Europe.
- (U) \$1,325 **ICR&D** - Funds USAF overseas R&D liaison offices. Funds management support and oversight of USAF Foreign Comparative Test Program and NATO Cooperative R&D Program. Funds USAF participation at the NATO Four-power Council, NAFAG, and its subgroups to promote NATO harmonization of requirements, standardization, and new cooperative R&D programs. Funds USAF participation at the US-Japan Systems and Technology Forum, its four sub-groups and USAF participation in international CALS. Funds expanded technology acquisition contracts and follow-on cooperative opportunities with Russia, Ukraine, and Eastern Europe. Partially funds technical assessments and international agreements negotiation start-up costs associated with promising cooperative R&D programs. Funds preliminary and negotiation costs associated with USAF NATO cooperative R&D funded programs and support for the NATO AWACS Board of Directors.
- (U) \$1,545 **AFMC** - Fully funds Air Force Materiel Command activities to identify, assess, and develop support packages and project arrangements as required by statute for new and existing candidate agreements. Supports Materiel Command activities for the USAF Foreign Comparative Test, and NATO Cooperative R&D Programs. Funds USAF participation in panel meetings of the Technical Cooperation Program, Air standardization Coordinating Committee, Standard NATO Agreements Working Groups, and other NATO forums. Funds periodic bilateral meetings to define new areas of possible cooperation, funds exploratory visits to France, Germany, Israel, United Kingdom, Canada, and other countries on new technology exchange projects. Funds support for the Air Force Technology Booth at International Forums. Funds the International Focal Point Officers at Centers and Laboratories to assist program officers and project engineers in identifying, creating and staffing new international cooperative agreements. Funds HQ staff to support and promote international research and development cooperation throughout AFMC. Funds small contracts in support of technology initiatives. Funds the support, management and documentation of these ICR&D efforts.
- (U) \$3,752 Total

Project 4645

Page 11 of 13 Pages

Exhibit R-2 (PE 1001004F)

1201

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>6 - Management and Support</b>	<b>1001004F International Activities</b>	<b>4645</b>	
<b>(U) B. <u>Program Change Summary (\$ in Thousands)</u></b>			
(U) Previous President's Budget	FY 1998	FY 1999	Total Cost
(U) Appropriated Value	3,715	3,827	
(U) Adjustments to Appropriated Value	3,715		
a. Congressional General Reductions	-121		
b. SBIR	-3		
c. Omnibus or other above reprogramming threshold			
d. Below threshold reprogramming			
(U) Adjustments to budget years since FY98 PB		-75	
(U) Current Budget Submit/President's Budget	3,591	3,752	
<b>(U) Change Summary Explanation:</b>			
Funding: N/A			
Schedule: N/A			
Technical: N/A			
<b>(U) C. <u>Other Program Funding</u></b>			
<b><u>Related RDT&amp;E:</u></b>			
<p>(U) This program provides for USAF management oversight of the NATO Cooperative R&amp;D funded by DoD (PE 603790D) and USAF (PE 603790F) and DoD funded Foreign Comparative Test (FCT) (PE 0605130D) programs. It also provides international agreement support for 6.1 through 6.3 programs for the Air Force Research Laboratory and for 6.4 through 6.5 programs for USAF Product and Logistics Centers.</p>			

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE			4645
6 - Management and Support										1001004F International Activities			
(U) D. Schedule Profile										FY 1998			
										1	2	3	4
(U)													
-NATO C3 Agency Program Review										X			X
-NATO Research & Technology Board												X	
-Aerospace Applications Studies Committee										X	X		
-Bilateral Technology R&D Projects MOUs										X	X	X	X
-Cooperative R&D Projects										X	X	X	X
-Foreign Comparative Testing Prioritization Board											X		
-NATO Cooperative R&D Prioritization Board										X	X	X	X
-R&D Loans of Defense Equipment										X			
-Systems & Technology Forum (JA)										X	X	X	
-Other Bilateral forums (CA, BZ, IS, SW, FR)										X	X	X	X
-Data/Information Exchange Annexes										X	X	X	X
-Engineer and Scientist Exchanges										X	X	X	X
-NATO Air Force Armaments Group										X	X	X	
-Four-Power Air Senior National Representatives												X	
-Four-Power Long-Term Technology Working Group											X		X

Project 4645

Page 13 of 13 Pages

Exhibit R-2 (PE 1001004F)

Project 4645

Page 13 of 13 Pages

Exhibit R-2 (PE 1001004F)

1203

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0101113F

PE TITLE: B-52 Squadrons

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development****0101113F B-52 Squadrons**

COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		10,594	3,235	6,436	2,733	0	0	33,727	0	TBD
4370	Advanced Weapons Integration (AWI)	0	2,340	3,691	0	0	0	33,727	0	TBD
4401	Air Force Mission Support System (AFMSS)	5,327	895	2,745	2,733	0	0	0	0	14,501
4402	Electronic Countermeasures Improvement (ECMI)	5,160	0	0	0	0	0	0	0	5,160
4493	B-61 Mod 11 Flight Tests	107	0	0	0	0	0	0	0	1,152
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

Note: RDT&amp;E articles are not separately priced.

**(U) A. Mission Description and Budget Item Justification**

The B-52 is the primary nuclear roled bomber in the USAF inventory. It provides the only Air Launch Cruise Missile carriage in the USAF. The B-52 also provides theater CINCs with a long range strike capability. The B-52 is undergoing a Conventional Enhancement Modification which allows it to carry MIL-STD 1760 weapons. The current service life of the aircraft extends to 2040. The Advanced Weapons Integration (AWI) program supports the conventional enhancement of the B-52 through the addition of the Wind Corrected Munitions Dispenser (WCMD), Joint Direct Attack Munition (JDAM), Joint Stand-off Weapon (JSOW), and the Joint Air-to-Surface Stand-off Missile (JASSM). The Air Force Mission Support System supports the Air Force movement of all mission planning to a common system. Electronic Countermeasures Improvement supports a DESERT STORM identified deficiency. The B-61 Mod 11 program was added at the direction of the Nuclear Posture Review and Presidential Decision Directive-30. The ALR-20A System Replacement replaces the current Electronic Countermeasures radio frequency receiver with modern equipment. The B-52's Avionics Midlife Improvement is a phased program to replace mission critical parts of the Offensive Avionics System that controls weapons delivery on the B-52. The B-52 program management is provided by Air Force Materiel Command's Oklahoma Air Logistics Center. The prime contractor for these projects is Boeing, McDonnell Defense in Wichita Kansas. This program is in budget activity 7 - Operational System Development, because it supports a currently operational system.

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0101113F B-52 Squadrons

## 7 - Operational System Development

## (U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Total Cost TBD
(U) Previous President's Budget (FY 1998PB)	10,612	3,427	3,765	
(U) Appropriated Value	11,035	3,427		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-249	-112		
b. SBIR	-192	-80		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-18			
(U) Adjustments to Budget Years Since FY 1998 PB			2,671	
(U) Current Budget Submit/ FY1999 President's Budget	10,594	3,235	6,436	TBD

## (U) Change Summary Explanation:

Funding: FY99 adds \$2.8M to AFMSS.

Schedule: None

Technical: None

## (U) C. Other Program Funding Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost
(U) Aircraft Procurement (PE 11113F)	20,157	38,428	38,308	27,793	69,448	35,416	6,458	1,000	237,008
(U) Missile Procurement (PE 11113F)	1,766	0	0	0	0	0	0	n/a	3,768

UNCLASSIFIED

DATE **February 1998**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE 0101113F B-52 Squadrons						
<b>7 - Operational System Development</b>							
(U) D. <u>Schedule Profile</u>							
	FY 1997			FY 1998		FY1999	
	1    2    3    4    1    2    3    4    1    2    3    4						
(U) WCMD/JDAM IOC							
(U) JSOW IOC							
(U) JASSM IOC							
(U) ECM Improvement IOC							
(U) B-61 Mod 11 Flight Test Completed			X				

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0101113F B-52 Squadrons

4370

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4370 Advanced Weapons Integration (AWI)	0	2,340	3,691	0	0	0	33,727	0	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

The requirement exists for the integration of near precision and precision guided MIL-STD 1760 weapons on the B-52. This includes the Wind Corrected Munitions Dispenser (WCMD), Joint Direct Attack Munition (JDAM), Joint Stand-off Weapon (JSOW), and the Joint-Air-to-Surface Stand-off Missile (JASSM). The B-52 is designated as the threshold bomber test platform for WCMD, JDAM, and JASSM with the objective of meeting aircraft integration and weapon testing requirements. To provide complete understanding of the program and its funding, the following schedule information in section C will reflect the money received from the WCMD, JDAM, and JASSM program elements for weapons integration on the B-52.

**(U) Acquisition Strategy**

The AWI program placed Boeing, ISDS, Wichita, KS on a Cost-Plus-Fixed-Fee contract as the Product Development Organization supported by OC-ALC/LH. Due to the short notice requirement, interface development and initial software requirements definition is being accomplished under the B-52 fleet support contract; a time and materials contract. The first phase will be to support the Direct Attack Stores Management Overlay (SMO) Developmental Test and Evaluation (DT&E) and DT&E of hardware interface equipment. The Direct Attack SMO supports WCMD and JDAM. The second phase will support the DT&E of the Stand-off SMO. The Stand-off SMO supports JSOW and JASSM. Due to the need for rapid Required Assets Availability and Initial Operational Capability dates, the Single Acquisition and Management Plan directed concurrence for RDT&E of the Direct Attack SMO and the production hardware (MIL-STD 1760 umbilicals to transfer 1760 data from the weapons pylon to the weapon itself). Although production continues through development of the Stand-off SMO, development of the production materials is completed in FY 97. JSOW and JASSM will use the same umbilicals as WCMD and JDAM.

(U) FY 1997 (\$ in Thousands):

- (U) \$0 No activity

(U) FY 1998 (\$ in Thousands):

- (U) \$354 Initiate Software development for JSOW and JASSM

- (U) \$125 Initiate Hardware development for JSOW and JASSM

- (U) \$1,861 Initiate Flight/Ground Testing

Project 4370

Page 4 of 21 Pages

Exhibit R-2 (PE 0101113F)

1208

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0101113F B-52 Squadrons

4370

- (U) \$2,340 Total  
 (U) FY 1999 (\$ in Thousands):  
 - (U) \$495 Continue Software development for JSOW and JASSM  
 - (U) \$270 Continue Hardware development for JSOW and JASSM  
 - (U) \$2,926 Flight/Ground Testing  
 - (U) \$3,691 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998PB)	0	2,479	3,765	
(U) Appropriated Value		2,479		
(U) Adjustments to Appropriated Value				
a. Cong Reductions		-81		
b. SBIR		-58		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Years Since FY 1998 PB			-74	
(U) Current Budget Submit/FY 1999 President's Budget	0	2,340	3,691	TBD
(U) Change Summary Explanation:				
Funding: None				
Schedule: None				
Technical: None				

Project 4370

Page 5 of 21 Pages

Exhibit R-2 (PE 0101113F)

1209

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0101113F B-52 Squadrons

PROJECT

4370

## 7 - Operational System Development

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Aircraft Procurement (PE 11113F)	4,119	8,740	4,058	1,000	0	0	0	0	17,917

## (U) Related Activities

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) RDT&E (WCMD - PE 27600F)	5,725	1,600	0	0	0	0	0	0	13,225
(U) RDT&E (JDAM - PE 27583F)	3,456	6,400	0	0	0	0	0	0	14,358
(U) RDT&E (JASSM - PE 27160F)	7,000	8,000	2,900	2,000	0	0	0	0	21,400

Project 4370

Page 6 of 21 Pages

Exhibit R-2 (PE 0101113F)

1210

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE		PROJECT					
7 - Operational System Development		February 1998		4370					
(U) D. Schedule Profile		PE NUMBER AND TITLE		0101113F B-52 Squadrons					
		FY 1997		FY 1998		FY 1999			
		1	2	3	4	1	2	3	4
(U) JDAM/WCMD SMO									
(U) Contractor interface development	X								
(U) Software/hardware Req DT&E	X								
(U) Test Planning	X								
(U) Technical data development	X								
(U) Ground/flight testing		X							
(U) AFMSS module DT&E	X								
(U) Program office support	X								
(U) Stand-off SMO									
(U) Contractor Interface Development	X								
(U) Software/hardware Req DT&E	X								
(U) Test planning	X								
(U) Technical data development									X
(U) Ground/flight testing									X
(U) AFMSS module DT&E									X
(U) Program support office	X								X

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT  
4370

PE NUMBER AND TITLE

7 - Operational System Development  
0101113F B-52 Squadrons(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software/hardware requirements	0	2,340	3,691
(U) Total	0	2,340	3,691

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	-----------------------	------------------

Product Development Organizations

Boeing, ISDS, Wichita, KS 88CG/SCCVO OC-ALC/LH	CPFF	4 Sep 97	3,702	0	2,608	0	404	690	0	TBD
Project Order PMA		13 Mar 96 1 Oct 96	2 322	0 0	2 172	0 0	0 75	0 75	0 0	2 322

Support and Management Organizations

OC-ALC/LAS AEDC/DOF	Project Order Project Order	16 Jul 97 3 Jun 97	750 48	0 0	750 48	0 0	0 0	0 0	0 0	750 48
------------------------	--------------------------------	-----------------------	-----------	--------	-----------	--------	--------	--------	--------	-----------

Test and Evaluation Organizations

419 FLTS 49 Tests Government Furnished Property: None	Project Order AF Form 616	31 Jan 96 31 Aug 96	5,152 10	0 0	152 10	0 0	1,861 0	2,926 0	0 0	TBD 10
-------------------------------------------------------------	------------------------------	------------------------	-------------	--------	-----------	--------	------------	------------	--------	-----------

Project 4370

Page 8 of 21 Pages

Exhibit R-3 (PE 0101113F)

1212

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
7 - Operational System Development										0101113F B-52 Squadrons		
Contractor or												
Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Subtotal Product Development			4,026	0	2,782	0	479	765	0	TBD		
Subtotal Support & Management			798	0	798	0	0	0	0	798		
Subtotal Test and Evaluation			5,162	0	162	0	1,861	2,926	0	TBD		
Total Project			9,986	0	3,742	0	2,340	3,691	0	TBD		

Project 4370

Page 9 of 21 Pages

Exhibit R-3 (PE 0101113F)

1213

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0101113F B-52 Squadrons

PROJECT

4401

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4401 Air Force Mission Support System (AFMSS)		5,327	895	2,745	2,733	0	0	0	0	14,501

Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0
----------------------------	---	---	---	---	---	---	---	---	---	---

(U) A. Mission Description and Budget Item Justification

Air Force Mission Support System (AFMSS) previously funded out of the AFMSS program element. Develops an aircraft specific avionics/weapons/electronic countermeasures (A/W/E) module to be used in conjunction with core AFMSS. AFMSS is the replacement mission planning system for the current B-52 Mission Data Preparation System. AFMSS will provide future ground/inflight mission planning capability. Block 1 provides the capability to plan conventional gravity missions at the unit level. Block 2 provides the capability to plan JDAM and WCMD missions, accomplish Periodic Depot Maintenance (PDM) on the B-52 test aircraft (050). It also establishes the capability to import TRICOMS mission data into AFMSS. Block 3 of this project will add planning capability for AGM-142, AGM-84, AGM-86C, and IU/TACAN. Block 4 provides JSOW and JASSM capabilities. Block 5 enables migration from the current AFMSS core architecture to the planned new architecture.

(U) Acquisition Strategy

The AFMSS program is organically conducted at OC-ALC/LAS. Previously funded by the AFMSS program element.

## (U) FY 1997 (\$ in Thousands):

- (U) \$2,079 Initiate Block 2 operational software for WCMD and JDAM  
 - (U) \$3,053 Complete periodic depot maintenance for the B-52 test aircraft  
 - (U) \$195 Establish TRICOMS import capability  
 - (U) \$5,327 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$615 Initiate Block 3 operational software for AGM-142, AGM-86C, AGM-84, IU/TACAN and for other advanced weapons, as required  
 - (U) \$280 Complete Block 2 operational software  
 - (U) \$895 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$700 Initiate Block 4 operational requirements for JSOW and JASSM and other advanced weapons as required.

Project 4401

Page 10 of 21 Pages

Exhibit R-2 (PE 0101113F)

1214

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT		
7 - Operational System Development	0101113F B-52 Squadrons		4401		
- (U) \$2,045 Complete Block 3 operational software					
- (U) \$2,745 Total					
(U) B. <u>Program Change Summary (\$ in Thousands)</u>					
(U) Previous President's Budget (FY 1998PB)	FY 1997	FY 1998	FY 1999	Total Cost	
(U) Appropriated Value	5,200	948		14,501	
(U) Adjustments to Appropriated Value	5,507	948			
a. Cong Reductions		-31			
b. SBIR	-180	-22			
c. Omnibus or Other Above Threshold Reprogram					
d. Below Threshold Reprogramming					
(U) Adjustments to Budget Years Since FY 1998 PB			2,745		
(U) Current Budget Submit/FY 1999 President's Budget	5,327	895	2,745	14,501	
(U) Change Summary Explanation:					
Funding: Funding added to FY99 and FY00 to complete Blocks 4 and 5. Air Combat Command added requirement for all non-1760 as well as 1760 weapons to have AFMSS mission planning capability.					
Schedule: None					
Technical: None					
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> - not applicable					

Project 4401

Page 11 of 21 Pages

Exhibit R-2 (PE 0101113F)

1215

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

PROJECT

4401

(U) D. Schedule Profile

The B-52 peculiar mission planning software development is accomplished and delivered incrementally. Each work package within a block build is treated as a mini-development with its own analysis, design, and test. The work package are integrated with one another and with the AFMSS core.

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) Contract award Block 2									
(U) Software development Block 2	X				X				
(U) Contract award Block 3				X					
(U) Software development Block 3					X				
(U) Test aircraft PDM	X								
(U) Contract award Block 4									
(U) Software development Block 4						X			
(U) Contract award Block 5						X			
(U) Software development Block 5								X	

Project 4401

Page 12 of 21 Pages

Exhibit R-2 (PE 010113F)

1216

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
7 - Operational System Development	0101113F B-52 Squadrons			4401
<u>(U) A. Project Cost Breakdown (\$ in Thousands)</u>				
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software development		1,516	832	2,695
(U) System Program Office support		758	63	50
(U) OC-ALC/LH Program Depot Maintenance		3,053	0	0
(U) Total		5,327	895	2,745

Project 4401

Page 13 of 21 Pages

Exhibit R-3 (PE 0101113F)

1217

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT				
7 - Operational System Development		0101113F B-52 Squadrons						4401				
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>												
Performing Organizations:												
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
<u>Product Development Organizations</u>												
Oklahoma ALC/LAS	Project Order	26 Mar 97	11,075	0	2,701	2,079	842	2,645	2,633	10,900		
<u>Support and Management Organizations</u>												
OC-ALC/LH	Project order	Oct 97	0	453	100	100	53	100	100	453		
OC-ALC/LAP	Project order	Jun 97	3,053	0	0	3,053	0	0	0	3,053		
<u>Test and Evaluation Organizations</u>												
419 <sup>th</sup>	DT&E	11 Dec 96	95	0	0	95	0	0	0	95		
Government Furnished Property: None												
Subtotal Product Development												
Subtotal Support & Management												
Subtotal Test and Evaluation												
Total Project												

Project 4401

Page 14 of 21 Pages

Exhibit R-3 (PE 0101113F)

Project 4401

Page 14 of 21 Pages

Exhibit R-3 (PE 0101113F)

1218

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0101113F B-52 Squadrons								4402	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4402	Electronic Countermeasures Improvement (ECMI)	5,160	0	0	0	0	0	0	0	5,160	
Quantity of RDT&E Articles		1	0	0	0	0	0	0	0	1	
<p>Note: Articles are not separately priced.</p> <p>(U) A. <u>Mission Description and Budget Item Justification</u>            The electronic countermeasures of the B-52 ALQ-172 ECM suite must be improved to cover a requirement identified during DESERT STORM. The improvement provides for an increased memory capability to handle advanced threats as well as correcting a coverage capability problem. The project adds a third ALQ-172 to the ECM suite and develops the new display required by the addition of the third system. The modification also improves two common core Line-Replaceable-Units. Normal circuit cards are replaced with circuit cards holding erasable PROMs and gate array modules. Memory is increased 400% and Mean-Time-Between-Failure is increased.</p> <p>(U) <u>Acquisition Strategy</u>            The ECM Improvement program placed Boeing, McDonnell Wichita, KS and ITT Avionics Nutley, NJ on Firm-Fixed-Price contracts as Product Development Organizations. Boeing, McDonnell provides the aircraft specific integration expertise, while ITT provides expertise on the ALQ-172 system. They are supported by OC-ALC/LH and WR-ALC/LNR.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u>            - (U) \$150 System Requirement Review            - (U) \$433 Fabrication of lab mock-up            - (U) \$4,577 Developmental kit fabrication            - (U) \$5,160 Total</p> <p>(U) <u>FY 1998 (\$ in Thousands):</u>            - (U) \$0 No activity</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u>            - (U) \$0 No activity</p>											

Project 4402

Page 15 of 21 Pages

Exhibit R-2 (PE 0101113F)

1219

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4402

## 7 - Operational System Development

0101113F B-52 Squadrons

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	4,818	0	0	5,160
(U) Appropriated Value	5,071			
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-150			
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-239			
(U) Adjustments to Budget Years Since FY 1997 PB				
(U) Current Budget Submit/ FY 1999 President's Budget	5,160	0	0	5,160

## (U) Change Summary Explanation:

Funding: \$150,000 reduction to pay Congressional bills. \$239,000 added from internal Air Force reprogramming.

Schedule: None

Technical: None

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Aircraft Procurement (PE 11113F)	0	4,749	5,013	17,139	49,213	35,575	6,778	200	118,667

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 1999
(U) Contract award	1	4	1	3	4	2	3
(U) Kit proof	X						
(U) System Requirement Review		X					
							4

Project 4402

Page 16 of 21 Pages

Exhibit R-2 (PE 0101113F)

1220

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0101113F B-52 Squadrons

4402

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Requirement Review	150	0	0
(U) Mock-up fabrication	300	0	0
(U) Developmental kit proof	4,577	0	0
(U) System Program Office support	133	0	0
(U) Total	5,160	0	0

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Boeing Wichita, ITT Avionics	FFP	Oct 96	5,027		0	5,027	0	0	0	5,027
<u>Support and Management Organizations</u>										
OC-ALC/LH	PMA	Oct 96	0		0	84	0	0	0	84
HQ ACC/LGF52	AF Form 616	03 Dec 96	25		0	25	0	0	0	25
WR-ALC/LNRB	AF Form 616	03 Dec 96	20		0	20	0	0	0	20
HQ ACC/DOIE	AF Form 616	18 Nov 96	4		0	4	0	0	0	4
<u>Test and Evaluation Organizations</u>										
n/a										

Government Furnished Property: None

Subtotal Product Development

5,027	0	0	5,027	0	0	5,027
-------	---	---	-------	---	---	-------

Project 4402

Page 17 of 21 Pages

Exhibit R-3 (PE 0101113F)

1221

UNCLASSIFIED



**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										4402	
PE NUMBER AND TITLE										0101113F B-52 Squadrons	
Contractor or											
Government	Method/Type	Award or	Performing	Project	Total	Budget	Budget	Budget	Budget to	Total	
Performing	or Funding	Obligation	Activity	Office	Prior to	FY 1997	FY 1998	FY 1999	Complete	Program	
Activity	Vehicle	Date	EAC	EAC	FY 1997	133	0	0	0	133	
Subtotal Support & Management			49	84	0	0	0	0	0	0	
Subtotal Test and Evaluation			0	0	0	0	0	0	0	0	
Total Project			5,076	84	0	5,160	0	0	0	5,160	

Project 4402

Page 18 of 21 Pages

1222

Exhibit R-3 (PE 0101113F)

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0101113F B-52 Squadrons

PROJECT

4493

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4493 B-61 Mod 11 Flight Tests	107	0	0	0	0	0	0	0	1,152
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

The program involves development and testing of a modified nuclear weapon on B-52 operational aircraft. Replacement of a strategic weapon was recommended by the Nuclear Posture Review and directed by Presidential Decision Review-30. Congress was notified during the second quarter of FY 1995, of the Department of Defense, and the Department of Energy intent to modify an existing weapon to provide a replacement option. Modifications (made by the Department of Energy) to the B-61 Mod 7 strategic bomb accomplish the mission requirements of the replaced weapon. Modification of an existing weapon is less expensive than the cost to develop a new weapon from "scratch." Flight testing by the 419th FLTS, Edwards AFB, CA is required to certify the modified weapon mass and physic properties are the same as the Mod 7 device.

**(U) Acquisition Strategy**

The Department of Energy is organically conducting the modifications to the B-61 Mod 11 weapon.

(U) FY 1997 (\$ in Thousands):

- (U) \$ 107 Complete data analysis and develop new ballistics tables for aircraft operational delivery.

- (U) \$ 107 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$0 No activity

(U) FY 1999 (\$ in Thousands):

- (U) \$0 No activity

Project 4493

Page 19 of 21 Pages

Exhibit R-2 (PE 0101113F)

1223

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## February 1998

PE NUMBER AND TITLE

0101113F B-52 Squadrons

**PROJECT  
4493**

**Total Cost**  
**1.152**

(U) DOE modification program

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0101113F B-52 Squadrons

4493

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Program Office support	107	0	0
(U) Total	107	0	0

Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	-----------------------	------------------

Product Development Organizations

SA-ALC/NWI	Project Order	25 Jun 97	280		280	0	0	0	0	280
SA-ALC/NWI	AF Form 616	10 Feb 97	107		0	107	0	0	0	107
SAF/FMBMB	MIPR	28 Jan 97	765		765	0	0	0	0	765

Support and Management Organizations

n/a

Test and Evaluation Organizations

n/a

Government Furnished Property: None

Subtotal Product Development	1,152	0	1,045	107	0	0	0	0	0	1,152
Subtotal Support & Management	0	0	0	0	0	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0	0	0	0	0	0
Total Project	1,152	0	1,045	107	0	0	0	0	0	1,152

Project 4493

Page 21 of 21 Pages

Exhibit R-3 (PE 0101113F)

1225

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0101120F  
PE TITLE: Advanced Cruise Missile

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development**

**0101120F Advanced Cruise Missile**

PROJECT

**3844**

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3844	(U) Advanced Cruise Missile	1,105	2,314	0	0	0	0	0	0	3,419
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

The Advanced Cruise Missile (ACM) is a low-observable, air-launched, strategic missile with significant improvements over the Air Launched Cruise Missile B version (ALCM-B) in range, accuracy, and survivability. Armed with a W80 warhead, it is designed to evade air and ground-based defenses in order to strike heavily defended, hardened targets at any location within any enemy's territory. The ACM is designed for B-52H external carriage. Missile procurement is complete. FY 97 and FY98 funds are required to complete depot development work. This program is in budget activity 7, Operational System Development, because the program effort involves depot development.

(U) Acquisition Strategy: To complete the acquisition of the AGM-129A (ACM), two programs were required at the depot. In 1997 the capability to repair software will be completed. Final step involves setting up a maintenance and surveillance capability for nuclear aging and hardness at the depot. These funds will be obligated in the 3<sup>rd</sup> quarter of FY98.

(U) FY 1997 (\$ in Thousands):

- (U) \$1,105 Complete Development of Software Repair Capabilities at Depot  
- (U) \$1,105 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$2,314 Develop Aging and Hardness Maintenance/Surveillance Capabilities at Depot  
- (U) \$2,314 Total

(U) FY 1998 SBIR Reduction (\$79,000)

- (U) \$36,000 Sec 8043 (1.5)  
- (U) \$30,000 Sec 8048 (NMD)  
- (U) \$13,000 Econ Assumption

Project 3844

Page 1 of 6 Pages

Exhibit R-2 (PE 0101120F)

1227

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0101120F Advanced Cruise Missile

3844

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost

(U) Previous President's Budget

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional General Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

e. Rescissions

(U) Adjustments to Budget Years Since FY 97 PB

(U) Current Budget Submit/98PB

(U) Change Summary Explanation:

Funding: None

Schedule: None

Technical: None

(U) \* Note: \$15M on withhold pending reprogramming for higher priorities

FY 1997  
1,107  
1,165FY 1998  
2,393FY 1999  
0

3,500

(30)  
(30) (79)

(2)

1,105 2,314\*

3,419

Project 3844

Page 2 of 6 Pages

Exhibit R-2 (PE 0101120F)

1228

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0101120F Advanced Cruise Missile

PROJECT

3844

(U) C. Other Program Funding Summary (\$ in Thousands)

ACM is a fielded weapon system. Procurement funds are for program management activities related to the on-going purchase of flight test instrumentation kits (TIKs) and FOT&E mission support. Flight TIKs are used to evaluate ACM operational availability and air vehicle reliability. O&M funding provides for support activities to maintain ACM for USSTRATCOM.

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Weapon Procurement (3020)									
(U) Budget Activity									
(U) 2. Other Missiles	771	843	1,422	1,464	1,391	1,431	1,470	0	8,792
(U) 4. Replenishment Spares	241	465	0	0	0	0	0	0	706
(U) Operations and Maintenance (3400)	13,166	18,591	14,936	14,879	12,996	13,087	13,812	0	101,467
(U) Related RDT&E (3600): None									

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
(U) Contract Milestones	1	2	3	4	1	2	4
(U) NONE							
(U) Other Program Events							
(U) Depot Activation/Completion							
(U) Aging and Surveillance Programs							

Project 3844

Page 3 of 6 Pages

Exhibit R-2 (PE 0101120F)

1229

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0101120F Advanced Cruise Missile

PROJECT

3844

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Depot Activation			
(U) Sensor Depot Test/Repair	165	0	0
(U) Software Compiler Rehost	940	0	0
(U) Surveillance	0	2,314	0
(U) Total	1,105	2,314	0

Project 3844

Page 4 of 6 Pages

Exhibit R-3 (PE 0101120F)

1230

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0101120F Advanced Cruise Missile

PROJECT  
3844

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## (U) Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget	Budget	Budget	Budget to	Total Program
						FY 1997	FY 1998	FY 1999	Complete	
(U) Product Development Organizations										
Hughes MSC Tucson, AZ	SS/FPIF	May 92	16,914	16,914	15,946	0	0	0	0	15,946
Kearfott Wayne, NJ	SS/FFP	Aug 93	8,077	8,077	6,200	0	0	0	0	6,200
Rockwell Newark, OH OC-ALC	SS/CPAF PO Contract	Jul 96 Oct 94/ Dec 96 Apr 98			3,135	1,105	0	0	0	4,240
					0	0	2,314	0	0	2,314

Project 3844

Page 5 of 6 Pages

Exhibit R-3 (PE 0101120F)

1231

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0101120F Advanced Cruise Missile	3844	
(U) <u>Support and Management Organizations</u> : Not Applicable			
(U) <u>Test and Evaluation Organizations</u> : Not Applicable			
(U) <u>Government Furnished Property</u> : Not Applicable			
(U) Subtotal Product Development		Total	Total
(U) Subtotal Support and Management		Prior to	Program
(U) Subtotal Test and Evaluation		FY 1997	38,993
(U) Total Project			5,707
		Budget	0
		FY 1997	0
		FY 1998	0
		FY 1999	0
		Budget to	0
		Complete	0
			44,700

Project 3844

Page 6 of 6 Pages

Exhibit R-3 (PE 0101120F)

Project 3844

Page 6 of 6 Pages

Exhibit R-3 (PE 0101120F)

1232

UNCLASSIFIED

PE NUMBER: 0102325F

UNCLASSIFIED

PE TITLE: Joint Surveillance System

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0102325F Joint Surveillance System								2996	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2996 FAA/AF Radar Replacement (FARR)		3,654	1,831	2,175	0	0	0	0	0	23,582	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**

This program is in budget activity 7 - Operational System Development because it provides funding for the modernization of a currently existing and operating system. The Joint Surveillance System (JSS) provides command, control and communications (C3) capability in support of CINC NORAD's (North American Aerospace Defense) Atmospheric Tactical Warning and Attack Assessment (ATW/AA) air sovereignty, and air defense requirements. The JSS Connectivity (JSS-C) program provides improvements to this capability by integrating new sensor data and enhancing communications capabilities via the Advanced Interface Control Unit (AICU). The FAA/Air Force Radar Replacement (FARR) program will replace 40 existing JSS radars with solid-state, three-dimensional ARSR-4 radars to improve mission performance and reduce operation and maintenance costs. The JSS-C portion of this PE falls under Budget Activity 7, research category 6.6, Operational System Development, as it is a system being deployed to the operational community to solve an operational deficiency in the existing operational system and is post Milestone Three. The FARR portion of this program element also falls under Budget Activity 7, Operational System Development, as it has received approval for production. The Region and Sector Air Operations Center (R/SAOC) Modernization program will provide a modernized C4I system with enhanced capability to integrate data from existing and future civil and military defense surveillance systems into a comprehensive recognized air picture to enhance CINC NORAD's capability to conduct peacetime air sovereignty, transition and conventional warfare in the event of aggression toward the North American Continent. The current system has reached saturation in its capability to receive, process, display, exchange, and employ air surveillance data from current sensor systems. In some cases, it has exceeded processing and displaying capacity, thus contributing to delayed C4I decisions. The outdated technology has become increasingly difficult and costly to maintain.

**(U) Acquisition Strategy:**

Management of the JSS Connectivity is by the Electronic Systems Center, Air Force Materiel Command, Hanscom AFB, MA. The prime contractor for the AICU is TRW, Aurora, CO. Enhanced Traffic Management System (ETMS), Department of Transportation, Cambridge, MA provides the AICU with flight plan information from FAA sources. The Federal Aviation Administration (FAA) is the lead acquisition agency for the FAA/AF Radar Replacement Program in accordance with a 19 November 1984 sub-agreement (as amended by Amendment 1, dated 1 September 1988) to FAA/AF National Agreement (NAT) 711. The FAA and the Air Force have established a joint Program Office at HQ, FAA, Washington, DC for this procurement. Northrup Grumman Corporation, Linthicum, MD is the prime contractor for the FARR program.

Project 2996

Page 1 of 6 Pages

Exhibit R-2 (PE 0102325F)

1233

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development		0102325F Joint Surveillance System	2996	
(U) FY 1997 (\$ in Thousands):				
- (U)	\$427	Provided program office support		
- (U)	\$844	Continued test support for FARR Joint Program Office (JPO)		
- (U)	\$832	Continued radar production, installation, test, and system checkout		
- (U)	\$1,551	Provided interoperability evaluations and commissioning support		
- (U)	\$3,654	Total		
(U) FY 1998 (\$ in Thousands):				
- (U)	\$295	Provide program office support		
- (U)	\$51	Continue test support for FARR Joint Program Office (JPO)		
- (U)	\$785	Continue installation, test and system checkout		
- (U)	\$700	Continue interoperability evaluations and commissioning support		
- (U)	\$1,831	Total		
(U) FY 1999 (\$ in Thousands):				
- (U)	\$311	Provide program office support		
- (U)	\$1,424	Continue test and system checkout		
- (U)	\$440	Continue interoperability evaluations and commissioning support		
- (U)	\$2,175	Total		

Project 2996

Page 2 of 6 Pages

Exhibit R-2 (PE 0102325F)

Project 2996

Page 2 of 6 Pages

Exhibit R-2 (PE 0102325F)

1234

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PROJECT  
2996

PE NUMBER AND TITLE

0102325F Joint Surveillance System

## 7 - Operational System Development

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	12,626	2,020	2,219	43,456
(U) Appropriated Value	13,239	2,020		
(U) Adjustments to Appropriated Value				
a. Cong /General Reductions	-111	-168	0	0
b. SBIR	-63	-21		
c. Omnibus or Other Above Threshold Reprogram	-9,479*			
d. Below Threshold Reprogramming	74			
e. Rescissions	-6			
(U) Adjustments to Budget Year Since FY 1998 PB			-44	
(U) Current Budget Submit/FY1999 President's Budget	3,654	1,831	2,175	33,638

## (U) Change Summary Explanation:

Funding: FY97 -\$21 for App Act Sec 8037(E), -\$10 for Sec 8037(H), -\$76 for Sec 8136, -\$4 for Sec 8138.

FY98 -\$47 for App Act Sec 8035, -\$55 for Sec 8041, -\$30 for Sec 8043, -\$25 for Sec 8048, -\$11 for Economic Assumptions.

\*1415-3 reclassification of appropriated funds to PE 0102326F from PE 0102325F (Projects 2976 and 4559.) The 1415-3 was approved after completion of the FY98 President's Budget, so the above amounts reflect allocated adjustments based on amounts reclassified. FY 98 and outyear funds have been budgeted in PE 0102326F.

Schedule: None

Technical: None

Project 2996

Page 3 of 6 Pages

Exhibit R-2 (PE 0102325F)

1235

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0102325F Joint Surveillance System

PROJECT

2996

(U) C. Other Program Funding Summary (\$ in Thousands)

(U) Other Procurement AF, WSC 86190A

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
0	849	639	0	0	0	0	Compl	Cost
							TBD	TBD

(U) D. Schedule Profile

FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
1	2	3	4	1	2	3	Compl	Cost
							TBD	TBD

(U) FARR last operational readiness date

(U) FARR follow-on support including baselining/commissioning before FAA final acceptance

Project 2996

Page 4 of 6 Pages

Exhibit R-2 (PE 0102325F)

1236

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0102325F Joint Surveillance System

PROJECT

2996

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Systems engineering	596	700	440
(U) Contractor engineering support	858	140	144
(U) Installation/Test/Checkouts	1773	696	1280
(U) Program Office support	427	295	311
(U) Total	3,654	1,831	2,175

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>					0	0	0	0	0	0
None										
<u>Support and Management Organizations</u>										
MITRE	Various	N/A	N/A	N/A	3,803	596	700	400	0	5,539
TEMS	Various	N/A	N/A	N/A	1,669	858	144	0	0	1,813
Martin Marietta	Various	N/A	N/A	N/A	5,341		140	0	0	6,339

Project 2996

Page 5 of 6 Pages

Exhibit R-3 (PE 0102325F)

1237

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										2996	
PE NUMBER AND TITLE										0102325F Joint Surveillance System	
Contractor or	Method/Type	Award or	Performing	Project	Total	Budget	Budget	Budget	Budget	Budget to	Total
Government	or Funding	Obligation	Activity	Office	Prior to	FY 1997	FY 1998	FY 1999	Complete	Program	
Activity	Vehicle	Date	EAC	EAC	FY 1997	FY 1997	FY 1998	FY 1999	Complete	Program	
Program Office	Various		N/A	N/A	1,087	427	295	311	0	7,771	
Support											
Test and Evaluation Organizations											
Various					4,022	1,773	696	1,280	0	7,771	
Government Furnished Property: None											
Subtotal Product Development					0	0	0	0	0	0	
Subtotal Support and Management					11,900	1,881	1,135	895	0	15,811	
Subtotal Test and Evaluation					4,022	1,773	696	1,280	0	7,771	
Total Project					15,922	3,654	1,831	2,175	0	23,582	

Project 2996

Page 6 of 6 Pages

Exhibit R-3 (PE 0102325F)

1238

UNCLASSIFIED

PE NUMBER: 0102326F

UNCLASSIFIED

PE TITLE: Region/Sector Operations Control Center Modernization Program

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	
BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT		
7 - Operational System Development			0102326F Region/Sector Operations Control Center Modernization Program							4592		
COST (\$ In Thousands)			FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4592 Region/Sector Operations Modernization Center (R/SAOC)*			8,921*	19,233	13,592	8,739	3,811	5,818	5,866	Continuing	TBD	
Quantity of RDT&E Articles			0	0	0	0	0	0	0	0	0	

\* Funds have been realigned from PE 0102325F to PE 0102326F. All dollars previously reported in PE 0102325F for Projects 2976 and 4559 were reclassified to PE 0102326F in FY98. FY 98 and outyear funds have been budgeted in PE 0102326F.

(U) A. Mission Description and Budget Item Justification

The Region and Sector Air Operations Center (R/SAOC) Modernization program will provide a modernized C4I system with enhanced capability to integrate data from existing and future civil and military defense surveillance systems into a comprehensive recognized air picture to enhance CINCPAC's (North American Aerospace Defense Command) capability to conduct peacetime air sovereignty, transition and conventional warfare in the event of aggression toward the North American Continent. The current system has reached saturation in its capability to receive, process, display, exchange, and employ air surveillance data from current sensor systems. In some cases, it has exceeded processing and displaying capacity, thus contributing to delayed C4I decisions. The outdated technology has become increasingly difficult and costly to maintain. This program is in budget activity 7 - Operational System Development because it provides funding for the modernization of a currently existing and operating system.

(U) Acquisition Strategy:

Management for the R/SAOC Modernization is by ESC, AFMC, Hanscom AFB MA. The R/SAOC Modernization acquisition is being refined in preparation of the MS II decision. Prime Contract was awarded in March 1997 to Litton Data Systems Division, Agoura Hills, CA.

Project 4592

Page 1 of 5 Pages

Exhibit R-2 (PE 0102326F)

1239

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0102326F Region/Sector Operations Control  
Center Modernization Program

PROJECT

4592

## (U) FY 1997 (\$ in Thousands):

- (U) \$5,969 Updated hardware and software in the US/Canadian Air Defense C2 Centers  
 - (U) \$1,118 Systems Engineering Support  
 - (U) \$1,452 Program Management and Technical Support  
 - (U) \$ 382 Program Office Support  
 - (U) \$8,921 Total\*

\* 1415-3 reclassification of appropriated funds from PE 0102325F (Joint Surveillance System) to PE 0102326F.

## (U) FY 1998 (\$ in Thousands):

- (U) \$15,207 Continuation of Prime Contract  
 - (U) \$1,560 Systems Engineering Support  
 - (U) \$2,035 Program Management and Technical Support  
 - (U) \$ 431 Program Office Support  
 - (U) \$19,233 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$9,062 Continuation of "Core" Software Development/Modification for COC and Prepare for Install of New Equipment at First Site  
 - (U) \$1,589 Systems Engineering Support  
 - (U) \$1,958 Program Management and Technical Support  
 - (U) \$ 983 Program Office Support  
 - (U) \$13,592 Total

Project 4592

Page 2 of 5 Pages

Exhibit R-2 (PE 0102326F)

1240

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0102326F Region/Sector Operations Control  
Center Modernization Program

4592

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget	FY 1997	FY 1998	FY 1999	Total
(U) Appropriated Value	0	20,512	14,065	Cost
(U) Adjustments to Appropriated Value	0	20,512		TBD
a. Cong /General Reductions				TBD
b. SBIR	-276	-872		
c. Omnibus or Other Above Threshold Reprogram	-163	-407		
d. Below Threshold Reprogramming	9,479*			
e. Rescissions	-104			
(U) Adjustments to Budget Years Since FY 1998 PB	-15		-473	
(U) Current Budget Submit/FY1999 President's Budget	8,921	19,233	13,592	TBD

## (U) Change Summary Explanation:

Funding: FY97 -\$25 for App Act Sec 8037(H), -\$54 for Sec 8037(E), -\$188 for Sec 8136, -\$9 for Sec 8138.

\*\$9,479 Approved by OUSD(C) on 4 Feb 97 (FY 97-21 IR). 1415-3 reclassification of appropriated funds from PE 0102325F to PE 0102326F. All funding previously reported in PE 0102325F for Projects 2976 and 4559) were reclassified to PE 0102326F in FY98. Consequently, all adjustments were also reallocated to PE 0102326F based on the reclassified amounts and are reflected in this R-2 submission. FY 98 and outyear funds have been budgeted in PE 0102326F.

Funding: FY98 -\$82 for Sec 8035, -\$120 for Sec 8041, -\$307 for Sec 8043, -\$256 for Sec 8048, -\$107 for Economic Assumptions

Schedule: R/SAOC contractor announced schedule growth and corresponding cost growth due to his underestimation of effort and staffing problems. The schedule was extended 8 months and resultant cost growth is estimated at \$15 million.

Technical: None

(U) C. Other Program Funding Summary (\$ in Thousands)

(U) Other Procurement AF, WSC 834340, BA 7,	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
P-1 55	0	0	11,137	4,713	1,916	4,831	5,037	Total
								Cost
								TBD

Project 4592

Page 3 of 5 Pages

Exhibit R-2 (PE 0102326F)

1241

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4592

## 7 - Operational System Development

0102326F Region/Sector Operations Control

Center Modernization Program

(U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) R/SAOC ORDII approved	x								
(U) R/SAOC RFP released	x								
(U) R/SAOC Mod Milestone II				x					
(U) R/SAOC Mod Contract Award		x							
(U) Site 1 (SEADS) Hardware & COTS Software Procurement					x				
(U) Procure Operator Work Stations							x	x	
(U) COC Site Turnover								x	
(U) Site 1 IOT&E								x	

Project 4592

Page 4 of 5 Pages

Exhibit R-2 (PE 0102326F)

1242

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0102326F Region/Sector Operations Control  
Center Modernization Program

4592

## (U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Engineering Support	1,118	1,560	1,589
(U) Program Office Support	382	431	983
(U) Program Management and Technical Support	1,452	2,035	1,958
(U) Development/Modification of Software for COC	5,969	15,207	9,062
(U) Total	8,921	19,233	13,592

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997 FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
LITTON	CPAF	14 Mar 97	(R/SAOC)		0	5,969	15,207	9,062	Cont	TBD
<u>Support and Management Organizations</u>										
MITRE	Various		N/A		0	1,118	1,560	1,589	Cont	TBD
TEMS	Various		N/A		0	1,452	1,098	1,808	Cont	TBD
Program Office	Various		N/A			382	568	983	Cont	
Support										
<u>Test and Evaluation Organizations</u>										
46 <sup>th</sup> Test Wing /Other Test Activities							100	150	Cont	TBD
Government Furnished Equipment							700	0		
Subtotal Product Development					0	5,969	15,207	9,062	Cont	TBD
Subtotal Support and Management					0	2,952	3,226	4,380	Cont	TBD
Subtotal Test and Evaluation					0	0	800	150	Cont	TBD
Total Project					0	8,921	19,233	13,592	Cont	TBD

Project 4592

Page 5 of 5 Pages

Exhibit R-3 (PE 0102326F)

1243

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0102411F

UNCLASSIFIED

PE TITLE: North Atlantic Defense System (NADS)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0102411F North Atlantic Defense System (NADS)								2980	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2980	North Atlantic Defense System (NADS)	4,954	1,257	615	0	0	0	0	0	60,970	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>This program provides improvements to command, control, and communications (C3) and air surveillance capabilities in Iceland. The Control Reporting Center (CRC) and air surveillance radars support air defense requirements in the strategically important Greenland-Iceland-Norwegian gap. The program is a joint program with NATO funding infrastructure while the US funds cryptographic capabilities, system engineering and integration activities. The program is in budget activity 7 since it supports improvements to these currently operational systems.</p> <p>(U) <u>Acquisition Strategy</u>: The acquisition of hardware has been completed. Current funding provides engineering support during the NATO Operational Review known as the JFAI (Joint Formal Acceptance Inspection). The JFAI is a NATO technical and financial audit. Any discrepancies must be corrected to satisfy NATO. This requires engineering and technical support to perform this function. NATO also requires On-Island Support to provide technical, management, logistics, and system support services. NATO is presently deliberating on the funding of Link 16 requirement for NADS. If NATO provides the infrastructure funding for Link 16, the US will fund system engineering and integration activities.</p> <p>(U) <u>FY 1997</u> (\$ in Thousands)          - (U) 2,018 Provided program office support          - (U) 2,723 Provided systems engineering support for NADS          - (U) 213 Completed support for Developmental Test and Evaluation (DT&amp;E) and Operational Test &amp; Evaluation (OT&amp;E).          - (U) 4,954 Total</p> <p>(U) <u>FY 1998</u> (\$ in Thousands)          - (U) 537 Provide program office support          - (U) 720 Provide systems engineering support for NADS          - (U) 1,257 Total</p> <p>NOTE: Program is nearing completion requiring only engineering support and program management.</p>											

Project 2980

Page 1 of 4 Pages

Exhibit R-2 (PE 0102411F)

1245

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0102411F North Atlantic Defense System (NADS) PROJECT  
2980

## 7 - Operational System Development

(U) FY 1999 (\$ in Thousands)

- (U) 195 Provide program office support
- (U) 420 Provide systems engineering support for NADS
- (U) 615 Total

NOTE: Program is nearing completion requiring only engineering support and program management

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)				
(U) Appropriated Value	4,962	1,442	0	60,548
(U) Adjustments to Appropriated Value	5,278	1,442		
a. Congressional General Reduction	-233	-183		
b. Below Threshold Reprogramming	-83	-2		
c. SBIR reduction	-8			
d. Rescissions				
(U) Adjustment to Budget Years			615	
(U) Current Budget Submit/FY1999 President's Budget	4,954	1,257	615	60,970

## (U) Change Summary Explanation:

Funding:

FY97 -\$27 for Appr Act Sec 8037(H), -\$95 for Section 8037(E), -\$106 for Section 8136 and -\$5 for Section 8138.

FY98 -\$55 for Appr Act Sec 8035, -\$81 for Section 8041, -\$22 for Section 8043, -\$18 for Section 8048, -\$7 for Economic Assumptions.

FY99 +615 added to complete on-island support and complete NATO Financial Audit

Schedule: FY1999 funding provided for program office support to accomplish the NATO Financial Audit and any residual clean-up taskings as a result of deficit findings of the Joint Formal Acceptance Inspection (JFAI).

Technical: None

(U) C. Other Program Funding Summary (\$ in Thousands)

Not Applicable

Project 2980

Page 2 of 4 Pages

Exhibit R-2 (PE 0102411F)

1246

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0102411F North Atlantic Defense System (NADS)

2980

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
(U) On-Site Development Test & Evaluation			x			
(U) Functional Configuration Audit (FCA)/Physical CA						
(U) System Operational Test & Evaluation				x		
(U) FOC*						
(U) Preparation for JFAI**					x	
(U) CI-13 Install**						
(U) JFAI***						
(U) NATO Financial Audit***						
(U) Program residuals and T&E						

\*Air Combat Command accepted operational system 4QFY97. Correction of OT&E residuals will complete FOC scheduled for 2QFY98.

\*\*Schedule updates reflect the separation of "Preparation for JFAI" and "CI-13 Install" requirements, which were previously listed together.

\*\*\*The addition of "JFAI" and "NATO Financial Audit", which were erroneously omitted on previous reports, and a more accurate estimate of the time necessary to complete residuals.

Project 2980

Page 3 of 4 Pages

Exhibit R-2 (PE 0102411F)

1247

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0102411F North Atlantic Defense System (NADS)

2980

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Engineering Support	2,723	720	420
(U) Test and Evaluation Support	213	0	0
(U) Program Support	2,018	537	195
(U) Total	4,954	1,257	615

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Contract

Government Method/Type

Performing or Funding

Activity Vehicle

Award or

Obligation

Date

Performing Project

Activity Office

EAC EAC

Total

Prior to

FY 1997BudgetFY 1997BudgetFY 1998BudgetFY 1999Budget toCompleteTotalProgramProduct Development OrganizationsSupport and Management Organizations

MITRE Various Oct 94

TEMS Various Jun 94

Program Office Various

Support

N/A

N/A

N/A

33,954

14,715

2,310

2,723

1,147

871

420

400

137

720

100

95

0

0

0

37,817

16,362

3,413

Test and Evaluation Organizations

Various

GFP/GFE: None

3,165

213

0

0

0

0

0

0

3,378

Subtotal Product Support

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

0

50,979

3,165

54,144

0

4,741

213

4,954

0

1,257

0

1,257

0

615

0

615

0

0

0

0

0

57,592

3,378

60,970

Project 2980

Page 4 of 4 Pages

Exhibit R-3 (PE 0102411F)

1248

UNCLASSIFIED

PE NUMBER: 0207131F  
PE TITLE: A-10 Squadrons

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development**

**0207131F A-10 Squadrons**

PROJECT

**3861**

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3861	A-10 Squadrons	0	0	3,212	6,956	6,761	3,119	10,511	TBD	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	TBD	TBD

**(U) A. Mission Description and Budget Item Justification**

The A-10 aircraft is the Air Force's dedicated Close Air Support (CAS) aircraft for support of ground maneuver forces. There is a need to upgrade and modernize the A/OA-10 aircraft to enhance its ability to support CAS and interdiction mission requirements. The Low Altitude Safety and Targeting Enhancement (LASTE) computer upgrade will enhance the computer memory, throughput, and system architecture to allow the aircraft to integrate advanced weapons and accommodate a situational awareness display, a data-link capability, an Electronic Warfare Management System, and the Digital Terrain System. This program is in budget activity 7 - Operational System Development because it supports an operational system.

**(U) Acquisition Strategy:**

The LASTE development will be conducted under the A-10 Prime Contract scheduled to be awarded in March 1998 on a full-and-open basis.

(U) FY 1997 (\$ in Thousands):  
- (U) \$0 Total

(U) FY 1998 (\$ in Thousands):  
- (U) \$0 Total

(U) FY 1999 (\$ in Thousands):  
- (U) \$2,312 LASTE Computer Upgrade  
- (U) \$2,358 Total

Project 3861

Page 1 of 3 Pages

Exhibit R-2 (PE 0207131F)

1249

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3861

## 7 - Operational System Development

0207131F A-10 Squadrons

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget	0	0	2,312	TBD
(U) Adjustments to Budget Years Since FY 1998 PB	0	0	0	
(U) Current Budget Submit/ FY 1999 President's Budget	0	0	2,312	TBD

## (U) Change Summary Explanation:

Funding: None

Schedule: None

Technical: None

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl TBD	Total Cost TBD
(U) Aircraft Procurement, BP-11 (PE 27131F)	29,613	24,412	31,088	25,365	52,269	24,783	26,398	TBD	
(U) BP-29 (PE 207442F)	0	2,500	8,200	6,400	4,900	2,400	0	TBD	24,400

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
1	2	4	1	2	4	2	4
	3		2	3	1	3	
					X		

(U) Low Altitude Safety and Targeting Enhancement (LASTE) computer upgrade RDT&amp;E

Project 3861

Page 2 of 3 Pages

Exhibit R-2 (PE 0207131F)

1250

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
7 - Operational System Development		0207131F A-10 Squadrons						February 1998 3861	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>									
		FY 1997	FY 1998	FY 1999					
(U) LASTE		0	0	2,312					
(U) Total		0	0	2,312					
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>									
Performing Organizations:									
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Total Budget to Complete Program
Product Development Organizations									
LASTE		TBD	TBD		0	0	0	2,312	8,100 10,412
Lockheed Martin Federal Systems	A-10 Prime Contract/CPAF	1Q99							
Support and Management Organizations									
Not Applicable									
Test and Evaluation Organizations									
Not Applicable									
Government Furnished Property: None									
Subtotal Product Development					0	0	0	2,312	8,100 10,412
Subtotal Support & Management									
Subtotal Test and Evaluation									
Total Project							2,312	8,100	10,412
Project 3861									
Exhibit R-3 (PE 0207131F)									

Page 3 of 3 Pages

1251

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207133F

PE TITLE: F-16 Squadrons

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207133F F-16 Squadrons								2671	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2671	F-16 Squadrons	125,489	95,333	125,076	119,522	95,498	55,088	41,912	TBD	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**

The F-16 fighter aircraft program satisfies the need for modernization of the USAF and allied multimission tactical fighter forces. The F-16 is a single-engine, single-seat, multirole tactical fighter with full air-to-air and air-to-surface combat capabilities. The F-16 complements the F-15 in counter-air missions and is the primary aircraft in the surface attack role. The F-16C/D program develops, integrates, and qualifies systems to enhance the overall performance of the F-16 mission.

The F-16 program also develops enhanced combat capability in both the air-to-ground and air-to-air role. Improvements (all within the FYDP) include completion of the Mid-Life Update (MLU) Program, the Modular Mission Computer (MMC), Block 30 GPS Integration, Smart Weapons Integration, and Pratt & Whitney 229 Engine design improvements. The planned program also develops Close Air Support (CAS) enhancements for 250 Block 40 C/D by integrating the Night Vision Imaging System (NVIS). The F-16C/D development efforts are complemented by comprehensive Operational Flight Program (OFF) upgrades.

To meet the need beyond the turn of the century, a Mid-Life Update (MLU) of aircraft avionics is being conducted by our European partners. MLU involves various mods to European F-16A/B, including the Modular Mission Computer (MMC), which USAF Block 50s will eventually employ. The MMC will extend the cost effective life of the F-16 through replacement of three Line Replaceable Units and the addition of significant memory and processing growth provisions. The latest version of the F-16C/D has significantly improved display processors, enabling increased pilot situational awareness. Efforts are underway to upgrade the Improved Data Modem (IDM) data link capability on the Block 50 aircraft with the latest version of the High Speed Anti-Radiation Missile (HARM).

Additionally, future capability is highlighted by new developments such as: AIM-9X for Blocks 40/50, Color Displays for Blocks 40/50; Improved Flight Controls for Blocks 30/40/50; Link 16 for Blocks 40/50; MMCs added for Block 40s; Advanced Weapons Integration; Night Vision Imaging System (NVIS), Enhanced/Expanded Fire Control Computer (EEFCC); Improved Flight Control Computer for the Block 30; Improved Airborne Video Tape Recorder (IAVTR) for Block 50 and On-Board Oxygen Generating System (OBOGS) for all F-16 C/D aircraft; and Common Configuration Integration Program (CCIP) Integration (Time & Materials). CCIP will modify all Block 40 and Block 50 F-16 aircraft. CCIP pulls together several related programs under one umbrella and allows integration of AIM-9X onto F-16:

- The main driver for CCIP will be the Link 16 program. Link 16 is a data link that connects main components of a battle arena to maintain awareness and to share position data. The Link 16 program designs the appropriate Group A (hardware mounted permanently on aircraft) to incorporate existing Group B (hardware that is easily removed from airplane) developed by the Multifunctional Information Distribution System (MIDS) Office and adapted for use on the F-16.
- To enhance the display of the Link 16 data, the current black and white display will be changed out with the color display used by the European Participating Air Force countries on the MLU Program.
- To have sufficient computing power in the Block 40 aircraft to operate Link 16 and to allow the cost savings of using a common Operational Flight Program, the MMC has to be upgraded to the same one used on the Block 50 aircraft.

Project 2671

Page 1 of 8 Pages

Exhibit R-2 (PE 0207133F)

1253

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0207133F F-16 Squadrons

PROJECT

2671

d. The Joint Helmet Mounted Cueing System (JHMCS) incorporates a man-mounted, ejection capable helmet mounted display system, with capability to cue and verify cueing of high off-axis sensors and weapons. JHMCS includes a flight helmet with display optics, image source, helmet tracker transducer w/attached cable, graphics processor/video hardware and software to drive the display, helmet tracker hardware and software, interfaces to the aircraft computers, weapons and sensor hardware, with software to integrate the JHMCS functions with other onboard systems.

The F-16, which received Milestone III approval in FY 1977, is an operational aircraft. Since the development activities in this PE support an operational aircraft, these development activities are funded in the Operational System Development budget activity 7.

(U) **Acquisition Strategy:** Procurement of additional F-16 aircraft is not funded beyond the buy of 3 provided by Congress in the FY 98 Appropriations Act. RDT&E funds will primarily be executed in developing improved capability, maintenance and safety mods. Operational Flight Program (OFF) software will be continuously updated to complement mod development efforts. The approach to contracting varies by individual project. LMTAS is the Prime on all systems except Trainer (Hughes Prime) and 229 Engines (Pratt & Whitney Prime). Contract types are CIPF, CPFF, FFP.

## (U) FY 1997 (\$ in Thousands):

- (U)	\$2,100	Completed MLU Engineering and Manufacturing Development (EMD)
- (U)	\$10,900	Continued MMC Upgrade Block 50
- (U)	\$1,030	Continued F-16 Block 40 Close Air Support EMD
- (U)	\$4,400	Continued Block 30 GPS
- (U)	\$12,000	Continued Smart Weapons integration
- (U)	\$44,601	Continued OFF development
- (U)	\$26,400	Continued Flight Tests Developmental Test & Evaluation (DT&E)
- (U)	\$3,700	Started/Completed BEFCC
- (U)	\$4,800	Continued CCIP (Time & Materials)
- (U)	\$1,000	Completed OBOGS development
- (U)	\$10,500	Started Weapon System Trainer/Unit Training Devices (UTDs)
- (U)	\$1,000	Completed Pratt & Whitney 229 Engines
- (U)	\$1,100	Started/Completed JHMCS design analysis
- (U)	\$1,358	Continued Government Test/Support
- (U)	\$600	Wright Lab Support/Studies
- (U)	\$125,489	Total

Project 2671

Page 2 of 8 Pages

Exhibit R-2 (PE 0207133F)

1254

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207133F F-16 Squadrons

2671

(U) FY 1998 (\$ in Thousands):

-	(U)	\$7,400	Start Link 16 Development/Integration Block 40/50
-	(U)	\$3,000	Continue UTDs
-	(U)	\$37,600	Continue Flight Tests DT&E
-	(U)	\$5,000	Complete Block 40 Close Air Support EMD
-	(U)	\$6,200	Complete MMC on Block 50; Start MMC on Block 40
-	(U)	\$25,573	Continue OFP Updates
-	(U)	\$2,000	Continue Advanced Weapons Integration
-	(U)	\$4,700	Continue Block 30 GPS
-	(U)	\$1,300	Continue Government Test/Support
-	(U)	\$2,500	Start Color Display Development/Integration for Block 40/50
-	(U)	\$60	Start AIM-9X Development/Integration
-	(U)	\$95,333	Total

(U) FY 1999 (\$ in Thousands):

-	(U)	\$22,800	Continue Link 16 Block 40/50
-	(U)	\$4,300	Continue Block 40/50 Color Display Development/Integration
-	(U)	\$32,500	Continue Flight Tests DT&E
-	(U)	\$37,704	Continue OFP Updates
-	(U)	\$1,293	Complete Advanced Weapons Integration
-	(U)	\$3,200	Complete Block 30 GPS Integration
-	(U)	\$12,000	Continue MMC for Block 40
-	(U)	\$4,179	Continue UTDs
-	(U)	\$7,100	Continue AIM-9X development
-	(U)	\$125,076	Total

Project 2671

Page 3 of 8 Pages

Exhibit R-2 (PE 0207133F)

1255

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

2671

## 7 - Operational System Development

0207133F F-16 Squadrons

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost  
TBD

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

e. Rescission

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

## (U) Change Summary Explanation:

Funding: In FY 1998, \$643 cut is pending for inflation adjustment. In FY 1999, the \$24,585 adjustment includes \$20,000 transferred from procurement to accelerate CCIP, \$7,100 added for AIM-9X/JHMCS, and \$2,515 inflation adjustment cut.

Schedule: JHMCS is a new start in FY 1997 and AIM-9X is a new start in FY 1998.

Technical: The improved capabilities inherent in adding AIM-9X/JHMCS.

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl TBD	Total Cost TBD
(U) Aircraft Procurement, BP10, BA-2, PE 0207133 (F-16 Squadrons)	154,278	80,654							
(U) Aircraft Procurement, BP11, Mods, BA-5	112,241	172,636	229,319	244,501	278,427	254,692	206,296	TBD	TBD
(U) Aircraft Procurement, BP13, Post Production Support, BA-7	63,146	37,542	27,289	15,555	12,803	12,380	12,677	TBD	TBD

Project 2671

Page 4 of 8 Pages

Exhibit R-2 (PE 0207133F)

1256

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

## 0207133F F-16 Squadrons

## PROJECT

2671

**(U) D. Schedule Profile**

	FY 1997		FY 1998		FY 1999
	1 2 3	4	1 2 3	4	1 2 3
(U) ENGINEERING MILESTONES	*				
(U) Bk-50T4 FCA/PCA					
(U) Bk-50T5 CDR		*			
(U) T&E MILESTONES					
(U) Bk-40 CAS DT&E Start	*				
(U) CONTRACT MILESTONES					
(U) Link 16			X		
(U) JHMCS			X		
(U) MMC			X		
(U) Color Display			X		
(U) OBOGS		*			
(U) CCIP (T&M)	*				
(U) Digital Terrain System					
(U) Bk-30 GPS EMD					
(U) Advanced Weapons Integration Dev					
(U) Bk-30 NVIS					
(U) Screech Reduction for F110-229s					
(U) Bk-30 Fire Control Computer Mod			X		X

**X = Planned Events**

**\* = Completed Events**

Project 2671

Page 5 of 8 Pages

Exhibit R-2 (PE 0207133F)

1257

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2671

## 7 - Operational System Development

0207133F F-16 Squadrons

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Pratt & Whitney 229 Engine	1,000		
(U) LINK 16 Block 50		5,600	17,000
(U) Link 16 Block 40		1,800	5,800
(U) UTD	10,500	3,000	4,179
(U) Government Test/Support	1,358	1,300	
(U) Flight Tests DT&E	26,400	37,600	32,500
(U) MLU	2,100		
(U) Block 40 Close Air Support	1,030	5,000	
(U) MMC Block 50	10,900	3,700	
(U) MMC Block 40		2,500	12,000
(U) OFP Upgrades	44,601	25,573	37,704
(U) Smart Weapons Integration	12,000	2,000	1,293
(U) Blk 30 GPS Integration	4,400	4,700	3,200
(U) Color Display Block 50		2,100	3,000
(U) Color Display Block 40		400	1,300
(U) Studies/Wright Lab Spt/Misc.	600		
(U) OBOGS	1,000		
(U) EEFCC Blk 30	3,700		
(U) JHMCS	1,100		
(U) AIM-9X		60	7,100
(U) CCIP (Time & Materials)	4,800		
(U) Total	125,489	95,333	125,076

Project 2671

Page 6 of 8 Pages

Exhibit R-3 (PE 0207133F)

1258

UNCLASSIFIED

### RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

**0207133F F-16 Squadrons**

## PROJECT

2671

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
Trainer (Hughes)	FFP	Apr 97	44,979	44,979	0	10,500	3,000	4,179	27,300	44,979
MLU (Lockheed/Westing/Other)	SS/CPIF	92	102,800	102,800	100,700	2,100	0	0	0	102,800
Close Air Spt (LMTAS)	Proj Orders/SS/CPIF	Jan/Feb 95	49,830	49,830	43,800	1,030	5,000	0	0	49,830
MMC Blik 50 (LMTAS)	SS/CPIF	Jan 92	269,700	269,700	255,100	10,900	3,700	0	0	269,700
MMC Blik 40 (LMTAS)	SS/CP	Apr 98	27,500	27,500	0	0	2,500	12,000	13,000	27,500
OPF Upgrades (LMTAS)	CPIF/T&M	Dec 95	TBD	TBD	39,100	44,601	25,573	37,704	TBD	TBD
Smart Wpns (LMTAS)	CPIF	Dec 95	TBD	TBD	6,900	12,000	2,000	1,293	TBD	TBD
GPS Blik 30 (Various)	FFP	Jul 97	20,200	20,200	7,900	4,400	4,700	3,200	0	20,200
Color Displays (LMTAS)	SS/CPFF	Apr 98	8,069	8,069	0	0	2,500	4,300	1,269	8,069
Link 16 Blik 50 (LMTAS)	SS/CPFF	Apr 98	32,500	32,500	0	0	5,600	17,000	9,900	32,500
Link 16 Blik 40 (LMTAS)	SS/CPFF	Apr 98	15,524	15,524	0	0	1,800	5,800	7,924	15,524
CCIP (LMTAS)	T&M	Feb 97	6,200	6,200	1,400	4,800	0	0	0	6,200

Project 2671

Page 7 of 8 Pages

Exhibit R-3 (PE 0207133F)

1259

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE							2671		
7 - Operational System Development										0207133F F-16 Squadrons		
Contractor or Government	Method/Type or Funding	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Activity	Vehicle		EAC	EAC								
EEFCC	SS/FFP	Feb 97	3,700	3,700	0	3,700	0	0	0	3,700		
(LMTAS)												
OBOGS	SS/CPIF	Jul 96	2,500	2,500	1,500	1,000	0	0	0	2,500		
(LMTAS)												
JHMCS	SS/CPFF	Apr 98	1,100	1,100	0	1,100	0	0	0	1,100		
(LMTAS)												
AIM/9X	CPAF	Apr 98	32,360	32,360	0	0	60	7,100	25,200	32,360		
(LMTAS)												
229 Engine	SS/FFP	Dec 94	6,500	6,500	5,500	1,000	0	0	0	6,500		
(Pratt&Whitney)												
Support and Management Organizations												
Govt Test/Spt			263,023	263,023	260,365	1,358	1,300	0	0	263,023		
Modernization			1,400	1,400	900	500	0	0	0	1,400		
Planning Process												
Study												
Test and Evaluation Organizations												
Flight Tests			TBD	TBD	61,200	26,400	37,600	32,500	TBD	TBD		
Wright Labs			190	190	90	100	0	0	0	190		
Government Furnished Equipment/Property: N/A												
Subtotal Product Development												
Subtotal Support and Management					461,900	97,131	56,433	92,576	TBD	TBD		
Subtotal Test and Evaluation					261,265	1,858	1,300	0	0	264,423		
					61,290	26,500	37,600	32,500	TBD	TBD		
Total Project					784,455	125,489	95,333	125,076	TBD	TBD		
Project 2671												
Exhibit R-3 (PE 0207133F)												

Project 2671

Page 8 of 8 Pages

Exhibit R-3 (PE 0207133F)

1260

UNCLASSIFIED

PE NUMBER: 0207134F  
PE TITLE: F-15E Squadrons

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207134F F-15E Squadrons								0131	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
0131 Initial Operational Test and Evaluation		152,353	129,774	104,207	119,753	107,272	95,168	51,307	369,876	1,088,473	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	20 A/C	

(U) A. Mission Description and Budget Item Justification

The F-15E is the most versatile fighter in the world today. Configured with conformal fuel tanks (CFTs), the F-15E can deploy worldwide with minimal tanker support and arrive combat-ready. The F-15E retains air superiority capability and adds systems, such as Low Altitude Navigation Targeting Infrared for Night (LANTIRN), to meet the requirement for all-weather, deep penetration, and night/under-the-weather, air-to-surface attack. However, the threat includes a new generation of aircraft possessing all-weather detection and kill capabilities. The F-15E's avionics, armament, airframe, and engines must be improved to maintain its superiority against the threat into the next century. Avionics updates, exploiting proven technological advances, are being incorporated into the F-15E providing expanded capability and supporting an updated and fully integrated electronic warfare suite. As a result, this project develops enhanced offensive and defensive capability and survivability.

The F-15E PE also funds RDT&E activities for PE # 0207130, F-15A-D). The F-15E, which received contract award approval in FY84, is an operational aircraft and therefore the development activities in the PE are included in Budget Activity 7, Operational Systems Development.

(U) **Acquisition Strategy:** Program is a continuation of effort which includes the development of all F-15 models. Current contract award information is contained in R-3, Section B, "Budget Acquisition History and Planning Information". Funds are executed organically in support of equipment improvement, study, analysis, and test.

(U) FY 1997 (\$ in Thousands):

-	(U)	64,838	Continued development and testing of F-15 improvements to APG-63 radar.
-	(U)	34,056	Continued Operational Flight Program (OFP) development efforts.
-	(U)	25,092	Continued flight test of the OFP and flight testing of improvements initiated in prior years.
-	(U)	15,000	Development of ALQ-135, Band 1.5
-	(U)	5,963	Continued improvements contributed to Diminishing Manufacturing Sources (DMS).
-	(U)	5,156	Continued development of Programmable Armament Control Set (PACS) upgrade.
-	(U)	1,200	TEWS Intermediate Support System (TISS) replacement
-	(U)	1,000	Completed development of -229 engine improvements.
-	(U)	48	Repaired government furnished equipment used for R&D.
-	(U)	152,353	Total

Project 0131

Page 1 of 8 Pages

Exhibit R-2 (PE 0207134F)

1261

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

0207134F F-15E Squadrons

0131

## 7 - Operational System Development

(U) FY 1998 (\$ in Thousands):

- (U)	35,475	Continue OFP development efforts.
- (U)	32,006	Completes development and improvements of the APG-63 radar.
- (U)	15,300	Continue flight test of the OFP and flight testing of improvements initiated in prior years.
- (U)	15,900	Continue development of ALQ-135, Band 1.5
- (U)	5,650	Continue improvements attributed to DMS.
- (U)	5,170	Development of the Joint Helmet Mounted Cueing System (JHMCS).
- (U)	15,000	Development of the Link-16 data link for the F-15E.
- (U)	2,360	TISS replacement
- (U)	1,790	Development of the Combat Identification (ID) System.
- (U)	600	Repair government furnished equipment used for R&D.
- (U)	523	Continue development of PACS upgrade.
- (U)	129,774	Total

(U) FY 1999 (\$ in Thousands):

- (U)	41,748	Continue OFP development efforts.
- (U)	20,200	Continue flight test of the OFP and flight testing of improvements initiated in prior years.
- (U)	5,900	Continue development of the Link-16 data link for the F-15E.
- (U)	11,445	Continue development of the ALQ-135 Band 1.5.
- (U)	8,600	Continue developments attributed to DMS.
- (U)	4,674	Continue development of the Combat ID System.
- (U)	5,080	Continued development of the JHMCS.
- (U)	3,490	Development of the Air Data Processor (ADP).
- (U)	1,730	Continue development of PACS upgrade.
- (U)	740	TISS replacement
- (U)	600	Repair government furnished equipment used for R&D.
- (U)	104,207	Total

Project 0131

Page 2 of 8 Pages

Exhibit R-2 (PE 0207134F)

1262

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207134F F-15E Squadrons

0131

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget FY 1998 PB	FY 1997	FY 1998	FY 1999	Total Cost
(U) Appropriated Value	150,981	137,538	109,798	1,131,159
(U) Adjustments to Appropriated Value	158,095			
a. Cong Gen Reductions	-3,326	-4,519		
b. SBIR	-3,788	-3,245		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	+1,622			
e. Recissions	-250			
(U) Adjustments to Budget Years Since FY 1998 PB	152,353	129,774	-5,591	
(U) Current Budget Submit/FY 1999 President's Budget			104,207	1,088,473

## (U) (U) Change Summary Explanation:

**Funding:** \$3,495 reprogrammed in FY97 from Joint Helmet Mounted Cueing System (JHMCS). FY97 BTR also includes -\$1,873 for a cancellation bill. For the FY98 funds, \$882,000 is pending reprogramming to fund higher priorities and \$18,000 is pending for additional SBIR reduction.

**Schedule:** No changes.

**Technical:** No changes.

Project 0131

Page 3 of 8 Pages

Exhibit R-2 (PE 0207134F)

1263

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0207134F F-15E Squadrons

PROJECT

0131

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
								Compl	Cost
(U) Aircraft Procurement BP10 (PE27134F)	247,021	231,989	0	0	0	0	0	0	TBD
(U) Aircraft Procurement BP11 (Mods)	132,280	177,272	196,579	220,140	248,239	303,174	313,072	TBD	TBD
(PEs 27130F and 27134F)									
(U) Aircraft Procurement BP 11 (Mods)	0	0	0	0	0	8,519	22,387	TBD	TBD
(PE27442F)		6,074	7,851	7,732	7,714	7,820	8,029	TBD	TBD
(U) Aircraft Procurement BP13 (Post Prod Spt)	7,786								

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
	1	2	3	4	1	2	3	4
(U) JHMCS DT start								
(U) JHMCS OT start								
(U) PACS DT&E complete								
(U) OFP Suite 3								
(U) MSIP OT&E complete								
(U) E-model OT&E start								
(U) MSIP release								
(U) E-model release								
(U) OFP Suite 4 VCC CDR								
(U) APG-63 ground integration test start								
(U) APG-63 DT flight test start								
(U) APG-63 OT flight test start								
(U) Link-16 DT start								
(U) Combat ID DT start								
(U) ALQ-135, Band 1.5 DT&E start								
(U) ALQ-135, Band 1.5 OT start								
(U) TISS replacement								
(U) Air Data Processor EMD start								

Project 0131

Page 4 of 8 Pages

Exhibit R-2 (PE 0207134F)

1264

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207134F F-15E Squadrons

0131

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Flight Test	25,092	15,300	20,200
(U) OFP	34,056	35,475	41,748
(U) Link-16 data link	0	15,000	5,900
(U) APG-63(V)1	64,838	32,006	0
(U) Helmet Mounted Cueing System	0	5,170	5,080
(U) GFE/GFP Repair	48	600	600
(U) Falcon -229	1,000	0	0
(U) Parts Obsolescence	5,963	5,650	8,600
(U) PACS Upgrade	5,156	0,523	1,730
(U) Combat ID	0	1,790	4,674
(U) ALQ-135 Band 1.5	15,000	15,900	11,445
(U) Air Data Processor	0	0	3,490
(U) TISS Replacement	1,200	2,360	740
(U) Total	152,353	129,774	104,207

Project 0131

Page 5 of 8 Pages

Exhibit R-3 (PE 0207134F)

1265

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0207134F F-15E Squadrons

PROJECT  
0131

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	Budget FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
P&W (-229 Eng)	CPAF	Sep 94	6,520	6,520	5,520	1,000	0	0	0	6,520
GE (-129 Eng)			7,130	7,130	7,130	0	0	0	0	7,130
Boeing (GFE/GFP)	FFP	Dec 93	4,475	4,475	1,327	48	600	600	1,900	4,475
OFF Suite 4 Development	CPAF	May 98	257,040	257,040	37,246	34,056	35,475	41,748	108,515	257,040
Boeing APG63 (Feasibility Study)	CPFF	Feb 94	778	778	778	0	0	0	0	778
(Risk Reduction)	CPFF	Feb 94	9,892	9,892	9,892	0	0	0	0	9,892
(EMD)	CPAF	Sep 94	234,512	234,512	137,668	64,838	32,006	0	0	234,512
Boeing (JHMCS A-D)	CPAF		14,230	14,230		0	5,170	5,080	3,980	14,230
PACS Upgrade	CPAF	May 95	38,819	38,812	21,731	5,156	523	1,730	10,100	39,240
Wright Lab (DMS)	MIPR/PRs	Sep 94	58,789	58,789	12,046	5,963	5,650	8,600	26,530	58,789
Smart Weapons Integration	CPAF	Nov 99	40,640	40,640	0	0	0	0	40,640	40,640
ADP(E)	CPAF	Jan 99	5,280	5,280	0	0	0	3,490	1,790	5,280
ADCP(E)	CPAF	Dec 99	53,280	53,280	0	0	0	0	53,280	53,280
NGA (ALQ-135 Band 1.5)	FFP	May 97	42,345	42,345	0	15,000	15,900	11,445	0	42,345
Link-16 data link	CPFF	Feb 98	20,900	20,900	0	0	15,000	5,900	0	20,900
Combat ID	CPAF	May 98	16,750	16,750	0	0	1,790	4,674	10,286	16,750

Project 0131

Page 6 of 8 Pages

Exhibit R-3 (PE 0207134F)

1266

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT	0131
BUDGET ACTIVITY		PE NUMBER AND TITLE											
7 - Operational System Development		0207134F F-15E Squadrons											
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	Budget FY 1999	Budget to Complete	Total Program			
TISS	CPFF	Aug 97	EAC	EAC	0	1,200	2,360	740	400	4,700			
Replacement													
Support and Management Organizations													
(Msn Spt) Misc.													
16,708 0 0 0 0 16,708													
Test and Evaluation Organizations													
Boeing (Flt Test)	FFP	Oct 96			41,315	9,980	9,579	7,000	33,000	100,874			
Edwards (OFP)	PO	Oct 96			31,492	12,512	5,391	8,400	64,455	122,250			
Eglin (Flt Test)	PO	Oct 96			9,410	2,600	330	4,800	15,000	32,140			

Project 0131

Page 7 of 8 Pages

Exhibit R-3 (PE 0207134F)

Project 0131

Page 7 of 8 Pages

Exhibit R-3 (PE 0207134F)

1267

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0207134F F-15E Squadrons

PROJECT

0131

(U) B. Budget Acquisition History and Planning Information (Continued \$ in Thousands)

**Government Furnished Property:** The F-15 program funds for the repair of government furnished property (GFP) purchased and available for support of F-15 research and development. The GFP consists of avionics line replaceable units, special test equipment, flight test instrumentation, and special tooling needed by Boeing Aerospace and Northrop-Grumman to complete development on several F-15 aircraft hardware and software enhancements. Assets are rotated among several F-15 development contracts on an as needed basis and repaired organically through the network of repair contracts managed by the various Air Logistics Centers.

	<u>Total Prior to FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Budget FY 1999</u>	<u>Budget to Complete</u>	<u>Total Program</u>
Subtotal Product Development	233,338	127,261	114,474	84,007	257,421	816,501
Subtotal Support and Management	16,708					16,708
Subtotal Test and Evaluation	82,217	25,092	15,300	20,200	112,455	255,264
Total Project	332,263	152,353	129,774	104,207	369,876	1,088,473

Project 0131

Page 8 of 8 Pages

Exhibit R-3 (PE 0207134F)

1268

UNCLASSIFIED

PE NUMBER: 0207136F  
PE TITLE: Manned Destructive Suppression

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)**

DATE **February 1998**

BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT		
7 - Operational System Development		0207136F Manned Destructive Suppression						4595		
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4595	F-16 HARM Targeting System (HTS)	13,130*	12,259	2,443	0	0	0	0	0	55,278
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

\*For FY97 and prior, the project number was 2671. The project number was changed to 4595 starting in FY98 for administrative reasons.

**(U) A. Mission Description and Budget Item Justification**

The overall Manned Destructive Suppression (MDS) program funds the development, procurement and sustainment of the Air Force's lethal Suppression of Enemy Air Defenses (SEAD) capability. The program provides certain F-16 aircraft the capability to carry and employ the AGM-88 High-Speed Anti-Radiation Missile (HARM). The F-16C/Blk 50 has been modified to carry the AN/ASQ-213 HARM Targeting System (HTS) for real-time targeting, and "range known" HARM employment -the missile's most lethal mode. The RDT&E efforts are focused on making the HTS system more capable in advanced threat environments. This PE is in Budget Activity 7- Operational System Development because it supports HTS upgrade development.

**(U) Acquisition Strategy:**

The HTS program objective is to develop an enhanced HARM Targeting System capability that improves HARM effectiveness on F-16C/Blk 50 aircraft. The objective will be accomplished by EMD efforts that significantly upgrade and increase the aircraft real-time, reactive Suppression of Enemy Air Defenses(SEAD).

(U)	FY 1997 (\$ in Thousands)
-	(U) 7,432 Continued Engineering and Manufacturing Development (EMD) of HTS Upgrade.
-	(U) 914 Developed HTS Air Force Mission Support System (AFMSS) modifications.
-	(U) 908 Began HTS Test and Evaluation.
-	(U) 1,476 Mission Support
-	(U) 2,400 Aircraft/Systems Integration
-	(U) 13,130 Total
(U)	FY 1998 (\$ in Thousands)
-	(U) 7,665 Continue EMD of HTS Upgrade development.
-	(U) 866 Develop HTS Air Force Mission Support System (AFMSS) modifications.
-	(U) 2,427 Continue HTS Test and Evaluation.
-	(U) 1,301 Mission Support
-	(U) 12,259 Total

Project 4595

Page 1 of 5 Pages

Exhibit R-2 (PE 0207136F)

1269

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4595

## 7 - Operational System Development

0207136F Manned Destructive Suppression

(U) FY 1999 (\$ in Thousands)

- (U) 1,809 Continue EMD of HTS upgrade development.  
 - (U) 487 HTS Test and Evaluation.  
 - (U) 147 Mission Support  
 - (U) 2,443 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	11,821	13,561	2,492	56,629
(U) Appropriated Value	12,384	13,561		
(U) Adjustments to Appropriated Value:				
a. General Congressional Reductions	-263	-474		
b. SBIR	-300	-828 *		
c. Omnibus or Other Above Threshold Reprogramming	1,329			
d. Below Threshold Reprogramming	-20			
d. Rescissions				
(U) Adjustments to Budget Years Since FY98 PB			-49	
(U) Current Budget Submit/FY 1999 President's Budget	13,130	12,259	2,443	55,278

## (U) Change Summary Explanation:

## Funding:

- FY 97 funds (\$1,329M) were added for Upgrade Plus EMD contract effort, R6 flight test efforts, and mission planning.
- An additional SBIR reduction of \$28,000 is planned\*.
- FY99 reductions for an economic adjustment.

Schedule: N/A

Technical: N/A

Project 4595

Page 2 of 5 Pages

Exhibit R-2 (PE 0207136F)

1270

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207136F Manned Destructive Supression

4595

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) HTS Aircraft Procurement (BP11) AF PE 0207136F	0	12,172	3,314	138	0	0	0	0	22,648
(U) HTS Aircraft Procurement (BP19) AF PE 0207136F	0		12,855	0	0	0	0	0	12,855
(U) HTS Ops & Maintenance, AF PE 0207136F	0	8,754	10,960	6,995	7,814	8,483	8,294	Continuing	TBD

Related RDT&E: PE 0207133F, F-16 Squadrons.

NOTE: FY97-FY01 funding includes Air Force MSS (AFMSS) and WTT sustaining support, contractor sustaining engineering, depot development, repair, program office support and other related support activities.

## U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
(U) F-16 HTS Upgrade Development*						
(U) New Buy Lot 2 Contract Award						
(U) Retrofit Contract Award						
(U) New Buy Lot 1 Pod Deliveries						
(U) New Buy Lot 2 Pod Deliveries						
(U) R6 Fielding						

\*Note: This effort started second quarter FY96

Project 4595

Page 3 of 5 Pages

Exhibit R-2 (PE 0207136F)

1271

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development	0207136F Manned Destructive Suppression		4595	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) HTS Upgrade Project				
(U) HTS Pod Development	7,432	7,665	1,809	
(U) Aircraft/System Integration	2,400			
(U) Test & Evaluation	908	2,427	487	
(U) Training & Support Equip Development	914	866		
(U) Mission Support	1,476	1,301	147	
(U) Total	13,130	12,259	2,443	

Project 4595

Page 4 of 5 Pages

Exhibit R-3 (PE 0207136F)

1272

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207136F Manned Destructive Suppression

4595

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Raytheon/TI Systems	SS/CPAF	Various	6,808	6,808	6,532	276			0	6,808
Raytheon/TI Systems	SS/CPAF	Feb 96	27,680	28,400	17,474	7,329	7,665	1,809	0	34,277
Lockheed Ft Worth	TBD	Various				2,400			0	2,400
AFMSS					32	882	866		0	1,780
<u>Support and Management Organizations</u>										
Prog. Office Spt	Various	Various			1,909	1,405	1,301	147	0	4,762
<u>Test and Evaluation Organizations</u>										
Eglin	PO	Various			204	697	941	412	0	2,254
Edwards	PO	Various			373	141	1,486	75	0	2,075
Light Defender Support Orgs.	Various	Various			922					922
<u>Government Furnished Property: Not Applicable.</u>										
Subtotal Product Development					24,038	10,887	8,531	1,809	0	45,265
Subtotal Support and Management					1,909	1,405	1,301	147	0	4,762
Subtotal Test and Evaluation					1,499	838	2,427	487	0	5,251
Total Project					27,446	13,130	12,259	2,443	0	55,278

Project 4595

Page 5 of 5 Pages

Exhibit R-3 (PE 0207136F)

1273

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development**

**0207141F F-117A Squadrons**

PROJECT

**3956**

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3956 F-117A Stealth Fighter	11,777	8,964	5,147	4,896	2,903	2,361	3,642	11,446	55,589
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

The F-117A is the world's first operational low-observable (LO) combat aircraft. Its combination of stealth and precision weapons delivery capability allows the United States Air Force to hold even the most highly defended targets at risk. This program provides funds to develop improved systems for the F-117A aircraft. These improvements will enhance combat capability while maintaining a safe, reliable, and supportable aircraft. The F-117A is projected to be in service through at least 2015. The major research budget activity category is operational systems development; however, some of the research is engineering and manufacturing development (EMD). The final F-117A delivery to the Air Force (number 59) was in July 1990. The program is well past production and into sustainment. The single operational F-117A unit, the 49<sup>th</sup> Fighter Wing, is stationed at Holloman AFB, NM. The program uses Aircraft Procurement Air Force (APAF) modification (BA-5) money for an extensive modification program to keep the F-117A current with operational system and reliability/maintainability upgrades. Most modification projects require development efforts, funded with RDT&E money, before they are integrated into the fleet. Additionally, F-117A RDT&E funding supports integration, threat system, and technology studies, as required by the user.

This project provides research and development for multiple modifications to the F-117A weapons system. The first FY 99 RDT&E effort continues development work for the MIL-STD-1760 Stores Management Processor (SMP). This modification facilitates integration of advanced weapons on the F-117A, specifically, the Joint Direct Attack Munition (JDAM) and the Wind Corrected Munitions Dispenser (WCMD). The Single Configuration Fleet (SCF) sub-project includes development of new spray coating application techniques and panel access technologies to improve the reliability and maintainability of the weapon system. SCF development concludes in FY 98 and the modification effort begins in FY 99. This modification allows the weapon system to move toward a single, standard configuration for all F-117 airframes, fleetwide. This sub-project also includes efforts to integrate a single leading edge configuration, compatible with the overall Low Observable aircraft system. The next effort continues development for actual Smart Weapons Integration, JDAM and WCMD, on the F-117. This program is in budget activity 7, Operational System Development, because all aircraft have been delivered and the program is in its deployment phase.

**(U) Acquisition Strategy:** RDT&E funds are executed in developing improved capability, maintenance, and safety modification development efforts. Operational Flight Program (OFF) software is continuously updated (Block Cycle Update every 3 years) to complement modification development efforts. The contracting approach varies by individual project and involves Firm Fixed Price (FFP), Cost Plus Fixed Fee (CPFF), Cost Plus Award Fee (CPAF) contract types.

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207141F F-117A Squadrons	3956	

(U) A. Mission Description and Budget Item Justification - Continued

(U) FY 1997 (\$ in Thousands):

- (U) \$5,300	Continued development work on Stores Management Processor (SMP) (formerly known as MIL-STD-1760)
- (U) \$4,524	Continued development work on Single Configuration Fleet (SCF) (formerly known as RAM recoating)
- (U) \$1,953	Completed development work on Ozone Depleting Chemical
- (U) \$11,777	Total

(U) FY 1998 (\$ in Thousands):

- (U) \$4,669	Continue development work on SMP
- (U) \$4,295	Complete development work on SCF
- (U) \$8,964	Total

(U) FY 1999 (\$ in Thousands):

- (U) \$4,855	Continue development work on SMP
- (U) \$292	Start Smart Weapons Integration
- (U) \$5,147	Total

Project 3956

Page 2 of 6 Pages

Exhibit R-2 (PE 0207141F)

1276

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207141F F-117A Squadrons

3956

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget: FY 98 PB	11,797	9,520	5,251	44,416
(U) Appropriated Value	12,050	9,520		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions/Rescissions	-253	-311		
b. SBIR		-245		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-20		-104	
e. Recissions			5,147	55,589
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY99 President's Budget	11,777	8,964		

## (U) Change Summary Explanation:

Funding: A total of \$556K was removed in FY 98 for Congressional General Reductions and SBIR. \$289K removed from SMP project and \$267K removed from the integration of new smart weapons into Block 2 upgrades. In FY 99, \$104K was removed as an inflation adjustment.

Schedule: Delayed planned start of smart weapons integration from FY 98 to FY 99.

Technical: Reduction of funds removed new smart weapons integration from Block 2 upgrades increasing risk of conflict between software modules.

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Aircraft Procurement (BA-5), Appn 3010/BP1100, AF F117A Squadrons, PE 27141F	28,819	27,657	25,654	28,843	31,536	29,354	22,542	TBD	TBD

Project 3956

Page 3 of 6 Pages

Exhibit R-2 (PE 0207141F)

1277

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

## 0207141F F-117A Squadrons

**PROJECT  
3956**

(U) D. Schedule Profile		FY 1997			FY 1998		FY 1999
		1	2	3	4	1	2
		*	*	*	*	*	*
(U) F3 IRADS (RDT&E Start FY93, Retrofit Start Mar 95, Finished Jan 97)							
(U) RNIP+ (RDT&E Start Aug 91, Retrofit Started Oct 96 Finish Dec 99)	*						
(U) AP-102 Computer Upgrade (Retrofit Started Oct 96, Finish Jun 00)	*						
(U) Stores Management Processor (SMP) (RDT&E Start Jul 96; Retrofit Start May 00, Finish Sep 03)							
(U) High Temperature Edges Retrofit CA FY 2/93, Finish FY 2/98)					X		
(U) Single Configuration Fleet (SCF) (RDT&E Start Apr 96, Retrofit CA FY 2/99, Finish FY 3/04)							X
(U) Replace Life-Limited Skin Panels & Web Retrofit CA FY 2/99, Finish FY 2/04							X
(U) Ozone Depleting Chemical upgrade (RDT&E Started Sep 97, Retrofit Start Sep 99 Finish Dec 03)			*				X
(U) Smart Weapons Integration (RDT&E Started Oct 97)							
(U) Icing Detection and Protection (Retrofit CA FY 3/93, Retrofit Start FY 3/93, Finish FY 2/98)						X	

Project 3956

Page 4 of 6 Pages

Exhibit R-2 (PE 0207141F)

1278

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207141F F-117A Squadrons

3956

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Development work on SMP (MIL-STD-1760)	5,300	4,669	4,855
(U) Development work on SCF (RAM Recoating)	4,524	4,295	
(U) Development work on Ozone Depleting Chemical	1,953		292
(U) Smart Weapons Integration			5,147
(U) Total	\$11,777	8,964	

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Compl	Total Program

## Product Development Organizations

## SMP

## (Mil-Std-1760 modification)

Lockheed Martin Skunk Works (1760), Palmdale CA	CPAF	Jul 96	19,023	19,023	1,839	5,300	4,669	4,855	2,360	19,023
----------------------------------------------------	------	--------	--------	--------	-------	-------	-------	-------	-------	--------

## Single Configuration Fleet

## (RAM Recoat Modification)

Wright Laboratory, Signature technology office	AF 616	Apr 96	325	325	100	225	0	0	0	325
---------------------------------------------------	--------	--------	-----	-----	-----	-----	---	---	---	-----

Sandia Labs, Albuquerque NM

Lockheed Martin Skunk Works

(RAM), Palmdale CA

## Ozone Depleting Chemical

## Modification

	MIPR	May 96	3,900	3,900	500	2,700	700	0	0	3,900
	T&M	Jun 96	6,402	6,402	1208	1,599	3,595	0	0	6,402

Project 3956

Page 5 of 6 Pages

Exhibit R-3 (PE 0207141F)

1279

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT			
BUDGET ACTIVITY										PE NUMBER AND TITLE					
7 - Operational System Development										0207141F F-117A Squadrons					
Contract															
Contractor or Government	Method/Type or Funding	Award or Obligation	Performing	Project	Total	Budget	Budget	Budget	Budget						
Performing Activity	Vehicle	Date	Activity	Office	Prior to	FY 1997	FY 1997	FY 1998	FY 1999	to Compl	Program	Total			
Lockheed Martin Skunk Works (Ozone), Palmdale CA	CPFF	Sep 97	EAC 2,759	EAC 2,759	806	1,953	0	0	0	0	2,759	2,759			
Smart Wpn Integration Sacramento Air Logistics Center, McClellan AFB, CA	FFP	Oct 97	22,523	22,523	0	0	0	0	292	22,231	22,523	22,523			
Fuel Quantity Processor Contractor TBD	TBD	FY 02	TBD	657	0	0	0	0	0	657	657	657			
Support and Management Organizations N/A															
Test and Evaluation Organizations N/A															
Government Furnished Property: N/A															
Subtotal Product Development										4,453	11,777	8,964	5,147	25,248	55,589
Subtotal Support and Management										0	0	0	0	0	0
Subtotal Test and Evaluation										0	0	0	0	0	0
Total Project										4,453	11,777	8,964	5,147	25,248	55,589

Project 3956

Page 6 of 6 Pages

Exhibit R-3 (PE 0207141F)

Project 3956

Page 6 of 6 Pages

Exhibit R-3 (PE 0207141F)

1280

UNCLASSIFIED

PE NUMBER: 0207161F

UNCLASSIFIED

PE TITLE: Tactical AIM Missile

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207161F Tactical AIM Missile								4132	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4132 AIM-9 Product Improvement		29,245	51,199	52,966	40,807	16,993	2,695	0	0	212,884	
Quantity of RDT&E Articles		0	5	7	11	0	0	0	0	23	

**Note:** The RDT&E articles are deliverables under the Engineering and Manufacturing Development contract and are not separately priced.

**(U) A. Mission Description and Budget Item Justification**

The AIM-9 Sidewinder short range air-to-air missile is a launch and leave, air combat munition that uses passive infrared (IR) energy for acquisition and tracking of enemy aircraft and complements the Advanced Medium Range Air-to-Air Missile. Air superiority in the short range air-to-air missile arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. Improvements in missile seeker and kinematics allow retrofit of components to current missiles to the maximum extent possible. Anti-Tamper features will be incorporated to protect improvements inherent in this design. Retrofitting of components will extend the operational effectiveness of existing inventories at an affordable cost while continuing evolution of the AIM-9 series. AIM-9X is an ACAT I joint-service program with Navy lead. This program is in budget activity 7 - Operational System Development, since the AIM-9X is a long-term evolution to the AIM-9, a fielded system.

**(U) Acquisition Strategy:**

The Joint Air Force/Navy Short Range Air-to-Air Missile (SRAM) Upgrade Program objective is development and upgrade of the AIM9X missile to counter the AA-11+ threat. This is an ACAT ID program with the Navy as lead Service; the Air Force is a participating Service and jointly manages the program. Key provisions of the acquisition strategy are development of improved maneuverability of the airframe, improvement of Infra Red Imaging Midwave FPA seeker technology with high OBA gimbal, evolutionary design/modification of rocket motor, warhead, and fuse. Ultimate goal of this strategy is to maximize US capability to achieve day/night air-to-air superiority in a robust infra-red countermeasure environment through development of improved airframe guidance and control capability while maximizing sub-component utilization of AIM-9M fuse.

**(U) FY 1997 (\$ in Thousands):**

-	(U)	\$17,270	AIM-9X EMD
-	(U)	\$ 9,975	Continued sustaining engineering and in-house efforts
-	(U)	\$ 2,000	Began EMD development test. Conduct DT-IIA (captive carry tests)
-	(U)	\$29,245	Total

Project 4132

Page 1 of 7 Pages

Exhibit R-2 (PE 0207161F)

1281

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207161F Tactical AIM Missile	4132	
<p>(U) FY 1998 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$35,080 Continue manufacturing development, conduct Design Review II (DR II), fly captive test units, and start delivery of safe separation vehicles for DT-IIB</li> <li>- (U) \$ 5,144 Continue providing aircraft interface information to EMD contractor to include any available wind tunnel tests</li> <li>- (U) \$ 3,535 Continue preparations for DT-IIB and start DT-IIB</li> <li>- (U) \$ 7,440 Provide for consulting services, technical engineering, and management support</li> <li>- (U) \$51,199 Total</li> </ul> <p>(U) FY 1999 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$31,505 Continue the manufacturing development contract</li> <li>- (U) \$ 6,602 Continue providing aircraft interface to the EMD contractor. Incorporate results of wind tunnel</li> <li>- (U) \$ 9,550 Complete DT-IIB, start DT-IIC and start OT-IIA</li> <li>- (U) \$ 5,309 Provide for consulting services, technical engineering, and management support</li> <li>- (U) \$52,966 Total</li> </ul>			

Project 4132

Page 2 of 7 Pages

Exhibit R-2 (PE 0207161F)

1282

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
7 - Operational System Development		4132	
(U) B. Program Change Summary (\$ in Thousands)		0207161F Tactical AIM Missile	
	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget/FY 1998 PB	31,798	53,171	54,031
(U) Appropriated Value	32,882	53,171	54,031
(U) Adjustments to Appropriated Value			
a. Cong Reductions	-692	-1,972	
b. SBIR	-392		
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	-2,500		
e. Rescissions	-53		
(U) Adjustments to Budget Years Since FY 1998 PB			-1,065
(U) Current Budget Submit/FY 1999 President's Budget	29,245	51,199	52,966
(U) Change Summary Explanation:			212,884
Funding: FY98 adjustments included -\$1,972K in Congressional Reductions; FY99 adjustments include -\$1,065M removed for other higher priorities.			
Schedule: None			
Technical: Anti-Tamper requirements were added to the AIM-9X program.			
Project 4132		Exhibit R-2 (PE 0207161F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207161F Tactical AIM Missile								4132	
(U) C. Other Program Funding Summary (\$ in Thousands)											
(U) Missile Procurement, Budget Activity 2, PE 0207161F, Program Title: Tactical AIM Missile		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost	
					32,162	35,653	62,326	66,705	1,090,642	1,287,488	
(U) Missile Procurement, Budget Activity 2, PE 0207590F, Program Title: SEEK EAGLE				6,005		0	8,395		0	14,400	

Project 4132

Page 4 of 7 Pages

Exhibit R-2 (PE 0207161F)

Project 4132

Page 4 of 7 Pages

Exhibit R-2 (PE 0207161F)

1284

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY					DATE				
7 - Operational System Development					PROJECT				
(U) D. <u>Schedule Profile</u>					4132				
					0207161F Tactical AIM Missile				
					PE NUMBER AND TITLE				



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4132

## 7 - Operational System Development

## 0207161F Tactical AIM Missile

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Project Cost Categories			
a. Primary Hardware Development	17,270	35,080	31,505
b. Government Engineering Support	4,900	2,476	957
c. Contractor Engineering Support	4,180	5,144	6,602
d. Miscellaneous	720	4,760	4,131
e. Development Test and Evaluation	2,000	3,535	9,550
f. Travel	175	204	221
(U) Total	29,245	51,199	52,966

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Hughes	C/CPIF	Dec 94	5,694	5,694	5,694					5,694
Raytheon	C/CPIF	Dec 94	5,695	5,695	5,695					5,695
Hughes (EMD)*	C/CPIF	Dec 96	113,720	113,720	181	17,270	35,080	31,505	29,865	113,720
McDon-Doug#	C/CPIF	Jan 96	18,588	18,588	5,955	4,180	5,144	6,602	2,481	18,588
Field Activities	PO	Oct 96	N/A	N/A	898	6,900	6,011	10,507	20,985	50,358
Misc. In-House	PO		N/A	N/A		761	4,384	3,798	6,032	15,873

\*Note: Hughes became part of Raytheon Systems effective Dec 97.

#Note: McDonnell-Douglas became part of Boeing effective Aug 97.

Support and Management Organizations

Various Contracts	FFP	N/A	N/A	559	134	580	554	1,129	2,956
-------------------	-----	-----	-----	-----	-----	-----	-----	-------	-------

Test and Evaluation Organizations (Included in product improvement)

Project 4132

Page 6 of 7 Pages

Exhibit R-3 (PE 0207161F)

1286

UNCLASSIFIED

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
7 - Operational System Development										PE NUMBER AND TITLE	
										0207161F Tactical AIM Missile	
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
Government Furnished Property: NA											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
					18,423	29,111	50,619	52,412	59,363	209,928	
					559	134	580	554	1,129	2,956	
					18,982	29,245	51,199	52,966	60,492	212,884	

Project 4132

Page 7 of 7 Pages

Exhibit R-3 (PE 0207161F)

Project 4132

Page 7 of 7 Pages

Exhibit R-3 (PE 0207161F)

1287

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207163F

PE TITLE: Adv Med Range A/A Msl

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development****0207163F Adv Med Range A/A Msl**

PROJECT

**3777**

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
3777 AMRAAM		9,704	39,875	45,078	47,289	41,815	37,008	27,941	TBD	143,500	664,031
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

The Air Force and Navy developed the baseline Advanced Medium Range Air-to-Air Missile (AMRAAM) as a high performance, all weather missile to counter existing air vehicle threats operating at high or low altitude and having advanced Electronic Protection (EP) capabilities. The AMRAAM Pre-planned Product Improvement (P3I) program provides for a continuing, Joint Air Force/Navy research and development program which enables AMRAAM to: (1) be compatible with advanced fighters, (2) enhance AMRAAM capability and operational flexibility against mid-1990's and beyond threats, (3) incorporate high payoff technology developments, and (4) investigate new variants and/or alternate missions which may use many baseline missile attributes. Currently, improvements under the P3I program include enhanced EP capabilities; improved weapon effectiveness through improved warhead, fuzing, and guidance; and increased kinematics via a new 5-inch stretched rocket motor. This program is in budget activity 7 - Operational System Development, providing upgrades to the AIM-120C missile now in production.

**(U) Acquisition Strategy:**

The AMRAAM program is an Air Force ACAT 1C program. The Air-To-Air Joint System Program Office (JSPO) provides AMRAAM missile test assets for all development and operational tests conducted on the system, subsystems, components, and rail launchers. The JSPO develops system performance specifications at the missile level, for which it will retain configuration control.

Management of the AMRAAM program includes a price-based acquisition strategy offered to a single AMRAAM Prime Contractor as a "Total Package Deal." The "Deal" includes a Long Term Pricing Agreement (LTPA), Total System Performance Responsibility (TSPR), and sustainment activities to include depot level repair. This contractor will produce all AMRAAM missiles, provide technical support, sustain fielded missiles and perform depot and development activity. The net effect reduces total program costs.

**(U) FY 1997 (\$ in Thousands):**

-	(U)	\$	250	Continued P3I Phase 2 Engineering and Manufacturing Development (EMD) for EP, weapons effectiveness improvements and initiated kinematic improvements (5-inch rocket motor)
-	(U)	\$	4,940	Continued Phase 3 risk reduction to enhance EP and guidance
-	(U)	\$	3,437	Mission support
-	(U)	\$	1,077	Test and evaluation
-	(U)	\$	9,704	Total

Project 3777

Page 1 of 7 Pages

Exhibit R-2 (PE 0207163F)

1289

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3777

## 7 - Operational System Development

0207163F Adv Med Range A/A Msl

## (U) FY 1998 (\$ in Thousands):

- (U) \$25,383 Complete P3I Phase 2 EMD for EP, weapons effectiveness, and kinematic improvements
- (U) \$ 7,668 Complete Phase 3 risk reduction to enhance EP and guidance
- (U) \$ 3,297 Mission support
- (U) \$ 3,527 Test and evaluation
- (U) \$39,875 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 7,000 Conduct P3I Phase 3 improved EP fuzing capability
- (U) \$28,060 Initiate P3I Phase 3 EP and guidance EMD
- (U) \$ 3,219 Mission support
- (U) \$ 6,799 Test and evaluation
- (U) \$ 45,078 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget/FY 1998 PB	24,745	50,781	45,985	664,031
(U) Appropriated Value	25,883	43,781		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-593	-1851		
b. SBIR	-545	-2055		
c. Omnibus or Other Above Threshold Reprogram	-14,000			
d. Below Threshold Reprogramming	-1,000			
e. Rescissions	-41			
(U) Adjustments to Budget Years Since FY 1998 PB			-907	
(U) Current Budget Submit/FY 1999 President's Budget	9,704	39,875	45,078	664,031

Project 3777

Page 2 of 7 Pages

Exhibit R-2 (PE 0207163F)

1290

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207163F Adv Med Range A/A Msl

3777

(U) Change Summary Explanation:

Funding: In FY97, \$14M was removed from the program for Omnibus Above Threshold Reprogramming. In FY99, a non pay purchase inflation reduction occurred.

Schedule: Due to Phase 2 restructure, flight testing will be completed in Sep 98. The Phase 3 contract award was delayed to Oct 98 due to FY98 congressional language, therefore, the PDR will be moved to 3QFY99.

Technical: Due to the FY98 Congressional Budget reductions and rephasing language, the improved EP fuzing capability was moved to Phase 3 with FY99 completion.

(U) C. Other Program Funding Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl	Total Cost
(U) Missile Procurement, Budget Activity: #2									
(U) BP20 AMRAAM	110,605	104,016	114,627	107,219	105,045	127,637	123,112	502,110	6,833,276
(U) BP25 Replenishment Spares	11,885	0	5,236	10,557	10,441	10,447	10,347	Continuing	153,534
(U) BP26 Initial Spares	3,853	1,057	2,661	2,701	2,654	2,708	2,791	Continuing	79,828

Project 3777

Page 3 of 7 Pages

Exhibit R-2 (PE 0207163F)

1291

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

PROJECT

3777

0207163F Adv Med Range A/A Msl

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
(U) P3I Phase 2 Tape 7A FCA						
(U) P3I Phase 2 Tape 7B PDR/CDR		X				
(U) P3I Phase 2 Tape 7A Flt Test Comp						
(U) P3I Phase 2 Tape 7B Flt Test Comp		X				
(U) P3I Phase 2 Warhead CDR/FCA				X		
(U) P3I Phase 2 SCAS CDR/FCA					X	
(U) P3I Phase 2 Rocket Motor CDR/FCA						
(U) P3I Phase 3 Fuzing FCA						
(U) P3I Phase 3 EMD Contract Award					X	
(U) P3I Phase 3 PDR						X

"X" = Completion or Milestone

Project 3777

Page 4 of 7 Pages

Exhibit R-2 (PE 0207163F)

1292

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207163F Adv Med Range A/A Msl

3777

### (U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) a. Contract/Cost and Operational Effectiveness Analysis (COEA)	5,191	33,051	35,060
(U) b. Government Costs (Test, Support)	1,907	4,034	7,004
(U) c. GFE	0	0	323
(U) d. Contractor Support	2,606	2,790	2,691
(U) Total	9,704	39,875	45,078

### (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

#### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Misc. Contracts	FFP	Dec 95 - Mar 96	N/A	N/A	7,658	740	140	140	8,823	17,501
Various										
F08635-90-C-0201	FFP	Aug 90	N/A	N/A	5,200	0	0	0	0	5,200
Hughes*										
F08626-91-C-0034	CPIF	Mar 91	91,704	93,506	93,506	0	0	0	0	93,506
Hughes										
F08626-93-C-0044 (Phase 2)	CPAF	Jun 94	118,442	114,893	87,822	110	26,961	0	0	114,893
Hughes										
Phase 3 Risk Reduction		Oct 95	N/A	N/A	16,351	4,341	5,950	0	0	26,642

Project 3777

Page 5 of 7 Pages

Exhibit R-3 (PE 0207163F)

1293

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										3777	
PE NUMBER AND TITLE										0207163F Adv Med Range A/A Msl	
Contractor or Government	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
Phase 3 Improved Fuzing Capability	Contract	1QFY99	EAC	EAC			0	7,000	0	7,000	
Phase 3		1QFY99					0	27,920	113,709	141,629	
EP/Guidance											
EMD Contract											
Phase 3 Follow on		2QFY03					0	0	116,817	116,817	
<u>Support and Management Organizations</u>											
COEA	PO/MIPR	Jan 94			3,358					3,358	
Contractor		Oct 95 -			9,896	2,607	2,790	2,691	17,955	35,939	
Support	PR/REO	Mar 96									
JSPO Operations	REO/MIPR	Oct 95 - Sep 96			16,213	830	507	528	4,461	22,539	
<u>Test and Evaluation Organizations</u>											
Government Test	PO/MIPR	Oct 95 - Sep 96			29,437	1,077	3,527	6,476	32,038	68,555	
*Note: Hughes became part of Raytheon Systems effective Dec 97.											

Project 3777

Page 6 of 7 Pages

Exhibit R-3 (PE 0207163F)

1294

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207163F Adv Med Range A/A Msl

3777

## Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	BUDGET				Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Property</u>													
None.													
<u>Support and Management Property</u>													
None.													
<u>Test and Evaluation Property</u>													
TM/ECM Pods MIPR/PO													
Subtotal Product Development				210,537	5,191	33,051	35,060	239,349	523,187				
Subtotal Support and Management				29,467	3,436	3,297	3,219	22,415	61,835				
Subtotal Test and Evaluation				31,817	1,077	3,527	6,799	35,789	79,009				
Total Project				271,821	9,704	39,875	45,078	297,553	664,031				

Project 3777

Page 7 of 7 Pages

Exhibit R-3 (PE 0207163F)

1295

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207217F

UNCLASSIFIED

PE TITLE: Podded Reconnaissance System (PRS)

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT
7 - Operational System Development		0207217F Podded Reconnaissance System (PRS)							February 1998	4611
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4611	Theater Airborne Reconnaissance System	6,127	282		0	0	0	0	0	9,409
	Quantity of RDT&E Articles	1/*	0	0	0	0	0	0	0	1/*

\* RDT&E articles are not separately priced.

(U) A. Mission Description and Budget Item Justification

(U) The Theater Airborne Reconnaissance System (TARS) Podded Reconnaissance System (PRS) provides a responsive (on-demand), day/under-the-weather manned reconnaissance capability to support intelligence requirements of military, multinational, and other government agency users. It will provide literal, selective aspect electro-optical (EO) sensor imagery for bomb damage assessment. TARS will use on-board imagery recording and ground-based first phase imagery exploitation. It is intended to fill the penetrating, low altitude, under-the-weather medium-to-high threat niche not accomplished by current systems (national, UAVs, and other manned systems). TARS supports Combat Air Force (CAF) Mission Need Statement 328-93, Theater Airborne Reconnaissance System, 5 Jun 95.

(U) TARS will consist of 20 podded systems with embedded electro-optical (EO) sensor suites, provisions for a data link and a second sensor, five transportable Squadron Ground Systems (SGS), logistics support, and spares. It will be integrated into Air National Guard (ANG) Block 30 F-16C squadrons. Each TARS PRS system will provide a single forward/oblique EO sensor, sensor controller, wide-band recorder, second sensor window, and internal pod environmental control. The pod will interface with the F-16 cockpit Electronic Warfare Management System. The PRS will also provide space and environmental control required to implement a second vertical/oblique EO sensor and provisions for a P31 (Pre-Planned Product Improvement) Common Data Link. The SGS will interface with Combat Intelligence System (CIS) terminals.

(U) The TARS Program is in Budget Activity 7, Operational System Development. It involves commercial/government off-the-shelf technology and integration into operational (fielded) platforms.

(U) Acquisition Strategy: The acquisition strategy uses concurrent development/production and a firm fixed price contract. Aeronautical Systems Center (ASC), Wright-Patterson AFB, OH is the lead development activity. First year activities (FY 96) included contract award. Second year activities (FY 97) included completion of the Source Selection Process and a resulting Engineering Change Proposal to incorporate a new framing sensor, long lead item acquisition (pods, subsystem LRUs, etc.) and risk reduction to support first article development and procurement of production shipsets. Third year activities (FY 98) include first article testing, delivery of production systems, SGS segments, integration, and initiation of ANG unit activations. TARS will be Common Imagery Ground Surface System (CIGSS) and Common Data Link (CDL) compliant IAW Defense Airborne Reconnaissance Office guidelines.

Project 4611

Page 1 of 6 Pages

Exhibit R-2 (PE 0207217F)

1297

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
7 - Operational System Development		4611	
PE NUMBER AND TITLE		0207217F Podded Reconnaissance System (PRS)	
(U) FY 1997 (\$ in Thousands):			
- (U) \$30	Modeling and Simulation		
- (U) \$1,000	Flight Test		
- (U) \$4,527	NRE		
- (U) \$70	SEEK EAGLE Stores Certification		
- (U) \$160	Miscellaneous		
- (U) \$340	Program support		
- (U) \$6,127	Total		
(U) FY 1998 (\$ in Thousands):			
- (U) \$140	Flight Test		
- (U) \$142	Program Support		
- (U) \$282	Total		
(U) FY 1999 (\$ in Thousands):			
- (U) \$0	Total		

Project 4611

Page 2 of 6 Pages

Exhibit R-2 (PE 0207217F)

1298

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207217F Podded Reconnaissance System (PRS)

4611

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. Small Business Innovative Research

c. Below Threshold Reprogramming

d. Rescission

(U) Adjustments to Budget Years Since FY 1998 President's Budget

(U) FY 1999 PB

FY 1997	FY 1998	FY 1999	Total Cost
6,438	299	0	9,737
6,714	299		

-140

-136

-300

-11

0

282

0

0

9,409

(U) Change Summary Explanation:

Funding: Not Applicable.

Schedule: Not Applicable

Technical: Not Applicable

Project 4611

Page 3 of 6 Pages

Exhibit R-2 (PE 0207217F)

1299

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4611

## 7 - Operational System Development

0207217F Podded Reconnaissance System (PRS)

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Appn 3010, Initial Spares BP 16	0	0							1,700
(U) Appn 3010, Other Production Charges BP19	0	6,082							38,221

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
(U) Source Selection	1							
(U) Contract Award	2	3						
(U) Development Begins	*							
(U) Testing Begins								
(U) Begin Procurement								
(U) Mid-Bay Sensor Contract Award								
(U) Begin P <sup>3</sup> I Planning								
(U) Development Ends								
(U) Testing Ends								
(U) IOC								
(U) Procurement Ends								

\* denotes completed events

X denotes planned events

Project 4611

Page 4 of 6 Pages

Exhibit R-2 (PE 0207217F)

1300

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207217F Podded Reconnaissance System (PRS)

4611

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) SEEK EAGLE Stores Certification	70	0	
(U) Modeling and Simulation	30	0	
(U) Non-Recurring Engineering	4,527	0	
(U) Miscellaneous	160	0	
(U) Flight test	1,000	140	
(U) Program Support	340	142	
(U) Total	6,127	282	0

Project 4611

Page 5 of 6 Pages

Exhibit R-3 (PE 0207217F)

1301

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4611

## 7 - Operational System Development

0207217F Podded Reconnaissance System (PRS)

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
LMFS	FFP	27 Sep 96	7,337	7,337	2,810	4,527	0	0	0	7,337
DESC (BRIM M&S)	MIPR	8 Oct 96	130	130	100	30	0	0	0	130
EGLIN	AF 185	30 Jan 97	70	70	0	70	0	0	0	70
<u>Support and Management Organizations</u>										
SPO OVHD	Mission Spt	Misc	N/A	N/A	90	240	142	0	0	472
OO-ALC	AF 616	29 Aug 97	100	100	0	100	0	0	0	100
SPO Misc	Misc				0	160	0	0	0	160
<u>Test and Evaluation Organizations</u>										
AFFTC	AF 616	15 Apr 97	N/A	N/A	0	1,000	140	0	0	1,140
<u>Government Furnished Property: Not Applicable</u>										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
TOTAL										
					3,000	6,127	282	0	0	9,409

Project 4611

Page 6 of 6 Pages

Exhibit R-3 (PE 0207217F)

1302

UNCLASSIFIED

PE NUMBER: 0207247F  
PE TITLE: Air Force TENCAP

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207247F Air Force TENCAP								0001	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
0001	Air Force TENCAP	18,172	14233	6447	10285	10102	11093	10825	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
<b>(U) A. Mission Description and Budget Item Justification</b> Air Force TENCAP is a Congressionally mandated program to provide the Tactical Exploitation of National Capabilities (TENCAP). The objective of TENCAP is to pursue seamless integration of present and future national space systems' capabilities into military operations for the warfighter. TENCAP expedites improvements to Air Force combat capabilities by performing operational concept demonstrations with rapid prototyping. TENCAP is not a developmental program per normal acquisition guidelines, but does support future operational systems development. To enhance combat effectiveness, TENCAP will focus in three areas:  1) Exploit existing national systems for the tactical warfighter (TENCAP will conceive and demonstrate capabilities to exploit national systems). 2) Influence the design and operation of new national systems for the warfighter by advocating tactical impacts of the new systems (in the form of analysis and integration of national systems into roadmaps and architectures for Air Force weapons/C <sup>4</sup> I systems). 3) Educate warfighters about national systems capabilities (in the form of training, exercises, and readiness activities).  Since this effort supports fielded systems, it is in the budget activity #7 Operational Systems Development.  (U) <u>Acquisition Strategy</u> . Not Applicable.  (U) <u>FY 1997 (\$ in Thousands)</u> : - (U) \$14,672 Exploited the tactical use of existing national systems for the warfighter - --Talon Warrior (Supported training, exercises, and TENCAP applications) - --Talon Ready (Supported mission planning) - --Talon Shooter (Supported weapons delivery) - --Talon Knight (Supported Special Operations) - --Talon Command (Supported Air Force C2 systems) - --Talon Vision (Supported emerging technologies and applications) - (U) \$1,000 Transitioned TENCAP Concept Demonstrations to the field - (U) \$2,500 Program support - (U) \$18,172 Total											

Project 0001

Page 1 of 4 Pages

Exhibit R-2 (PE 0207247F)

1303

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
0001

## 7 - Operational System Development

0207247F Air Force TENCAP

(U) FY 1998 (\$ in Thousands):

- (U) \$11,733 Exploit the tactical use of existing national systems for the warfighter

- --Talon Warrior (Support for training, exercises, and TENCAP applications)

- --Talon Ready (Support mission planning)

- --Talon Shooter (Support for weapons delivery)

- --Talon Knight (Support Special Operations)

- --Talon Command (Support for Air Force C2 systems)

- --Talon Vision (Support for emerging technologies and applications)

- Transition TENCAP Concept Demonstrations to field

- (U) \$700 Program support

- (U) \$1800

- (U) \$14,233 Total

(U) FY 1999 (\$ in Thousands):

- (U) \$4,747 Exploit the tactical use of existing national systems for the warfighter

- --Talon Warrior (Support for training, exercises, and TENCAP applications)

- --Talon Ready (Support mission planning)

- --Talon Shooter (Support for weapons delivery)

- --Talon Knight (Support Special Operations)

- --Talon Command (Support for Air Force C2 systems)

- --Talon Vision (Support for emerging technologies and applications)

- Transition TENCAP Concept Demonstrations to field

- (U) \$800 Program support

- (U) \$900

- (U) \$6,447 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget FY1998	19,102	15,251	16,277	Continuing
(U) Appropriated Value	20,116	15,251		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-497	-646		
b. SBIR	-517	-372		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-900			
e. Rescission	-30			

Project 0001

Page 2 of 4 Pages

Exhibit R-2 (PE 0207247F)

1304

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207247F Air Force TENCAP

0001

Total Cost

(U) Adjustments to Budget Years Since FY1998 PB

(U) Current Budget Submit (FY1999 President's Budget)

(U) Change Summary Explanation:

Funding: \$500K FY97 reprogramming funded classified program. \$400K FY97 reprogramming and FY99 reduction funds higher priority Air Force and DoD requirements.

Schedule: None

Technical: None

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost Cont
(U) Other Procurement, BA 3, BPAC 2070	196	143	194	197	201	202	202		

(U) D. Schedule Profile:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	X	X
1	2	3	4	1	2	3	4		
Contractor Proposals for FY98 Projects									
FY98 Project Evaluations Complete									
FY98 Project Authority to Proceed									
FY99 Projects Identified									
FY99 Projects Evaluated and Approved									
FY99 Project Authority to Proceed									
FY00 Projects Identified									
FY00 Projects Evaluated and Approved									
FY00 Project Authority to Proceed									

Project 0001

Page 3 of 4 Pages

Exhibit R-2 (PE 0207247F)

1305

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0207247F Air Force TENCAP

PROJECT

0001

(U) A. Project Cost Breakdown (\$ in Thousands):

TALON Projects	FY 1997	FY 1998	FY 1999
Transition of Projects	14,672	11,733	4,747
Program Management Spt	1,000	700	800
	2,500	1,800	900

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

Product Development Organizations: None.Support and Management Organizations:

Multiple Lockheed Martin	Various CPAP	Multiple Sep 95			20,460	8,172	4,233	2,447	Cont	Cont
			Cont	Cont	0	10,000	10,000	4,000	Cont	Cont

Test and Evaluation Organizations: None.Government Furnished Property: Not applicable. No Government property furnished to non-Government entities.

Subtotal Product Development	0	0	0	0	0	0	0	0	0	0
Subtotal Support and Management	20,460	18,172	14,233	6,447	20,460	18,172	14,233	6,447	Cont	Cont
Subtotal Test and Evaluation	0	0	0	0	0	0	0	0	0	0
Total Project	20,460	18,172	14,233	6,447	20,460	18,172	14,233	6,447	Cont	Cont

Project 0001

Page 4 of 4 Pages

Exhibit R-3 (PE 0207247F)

1306

UNCLASSIFIED

PE NUMBER: 0207268F

UNCLASSIFIED

PE TITLE: Aircraft Engine Component Improvement Program (CIP)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207268F Aircraft Engine Component Improvement Program (CIP)								1012	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
1012	Aircraft Engine Component Improvement Program	92,636	98,058	92,069	93,659	116,663	115,259	114,560	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) Note: Prior to FY97 this program was funded under Program Element 0604268F.

(U) A. Mission Description and Budget Item Justification

CIP provides critical sustaining engineering support (only source) for in-service Air Force engines to maintain flight safety (highest priority), to correct service revealed deficiencies, to improve system Operational Readiness (OR) and Reliability and Maintainability (R&M), to reduce engine Life Cycle Cost (LCC), and to sustain engines throughout their service life. Historically, aircraft systems change missions, tactics, and environments to meet changing threats throughout their lives. Numerous new problems can develop in the engines through actual use during deployment, production, and service, and CIP provides the only funds to develop fixes for these field problems. CIP starts with delivery of the first production engine purchased with procurement funds, and continues over the engine's life, gradually decreasing to a minimum level (safety/depot repairs) sufficient to keep older inventory engines operational. CIP addresses out-of-warranty usage and life and enables the Air Force to obtain additional warranties when manufacturers incorporate CIP improvements into production engines. Since operational and safety problems arise throughout a system's service life, CIP must be maintained at a level to provide the engineering support to make the changes essential for continued satisfactory system performance at affordable costs. CIP ensures continued improvements in engine R&M factors, which reduce outyear support costs. Historically, R&M related CIP efforts reduce outyear Operations and Maintenance (O&M) and spares costs by a ratio greater than 21 to 1. O&M and spares budgets assume a viable CIP effort is in place. Without the outyear cost avoidance provided by CIP, outyear support funding would have to be increased drastically. CIP funding is driven by field events and types/maturity of engines, not by the total engine quantity. This program is in budget activity 7 - Operational System Development, Research Category 6.6 because all efforts support fielded systems.

(U) B. Acquisition Strategy

Contracts within this Program Element are awarded sole source to engine manufacturers. CIP tasks are generally assigned to original engine manufacturers. Tasks are assigned based on available funding and prioritization of candidate tasks.

Project 1012

Page 1 of 5 Pages

Exhibit R-2 (PE 0207268F)

1307

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207268F Aircraft Engine Component Improvement Program (CIP)	1012	
(U) FY 1997 (\$ in Thousands):			
- (U) 83,400	636 CIP tasks (244 redesign tasks, 318 repair development tasks, and 74 analysis tasks)		
- (U) 5,198	6000 test hours		
- (U) 4,038	Petroleum, oil, lubricants and other support costs		
- (U) \$92,636	Total		
(U) FY 1998 (\$ in Thousands):			
- (U) 81,962	626 CIP tasks (250 redesign tasks, 302 repair development tasks, and 74 analysis tasks)		
- (U) 10,600	7250 test hours		
- (U) 5,496	Petroleum, oil, lubricants and other support costs		
- (U) \$98,058	Total		
(U) FY 1999 (\$ in Thousands):			
- (U) 75,391	590 CIP tasks (239 redesign tasks, 270 repair development tasks, and 81 analysis tasks)		
- (U) 8,648	6500 test hours		
- (U) 8,030	Petroleum, oil, lubricants and other support costs		
- (U) \$92,069	Total		

Project 1012

Page 2 of 5 Pages

Exhibit R-2 (PE 0207268F)

Project 1012

Page 2 of 5 Pages

Exhibit R-2 (PE 0207268F)

1308

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207268F Aircraft Engine Component  
Improvement Program (CIP)

1012

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget FY1998 PB	92,704	93,122	93,921	
(U) Appropriated Value	96,850	103,122		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-2,027	-3,398		
b. SBIR	-2,119	-1,666		
c. Omnibus or Other Above Threshold Reprogram	85			
d. Below Threshold Reprogramming	-153			
e. Rescissions				
(U) Adjustments to Budget Years Since FY1998 PB			-1852	
(U) Current Budget Submit/FY1999 President's Budget	92,636	98,058	92,069	Continuing

## (U) Change Summary Explanation:

Funding: None

Schedule: No change.

Technical: No Change

(U) C. Other Program Funding Summary (\$ in Thousands) Not Applicable(U) RELATED ACTIVITIES:

(U) - PEs # 0604268A and #0604268N, Army/Navy Aircraft Engine CIPs for prior years

(U) - PEs # 0207268A and #0207268N, Army/Navy Aircraft Engine CIPs for FY96 and following years

(U) D. Schedule Profile: Not Applicable. CIP is a level of effort program that funds some 600 separate engineering tasks. Most are completed within two years.

Project 1012

Page 3 of 5 Pages

Exhibit R-2 (PE 0207268F)

1309

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT																																																																							
BUDGET ACTIVITY	PE NUMBER AND TITLE																																																																									
7 - Operational System Development	0207268F Aircraft Engine Component Improvement Program (CIP)		1012																																																																							
<p>(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>: A project cost breakdown is not applicable to this Program, because there are no individual projects, but several hundred independently managed tasks. The bulk of the funding goes to the major engine manufacturers. Cost breakdown for follow-on years is expected to be of similar proportions.</p> <table border="1"> <thead> <tr> <th></th> <th>FY97</th> <th>FY98</th> <th>FY99</th> </tr> </thead> <tbody> <tr> <td>Contracted Tasks</td> <td>83,400</td> <td>81,962</td> <td>75,391</td> </tr> <tr> <td>AFMTC Flight Tests</td> <td>1,457</td> <td>600</td> <td>2,500</td> </tr> <tr> <td>AEDC Altitude Tests</td> <td>3,741</td> <td>10,000</td> <td>6,148</td> </tr> <tr> <td>Petroleum/Oil/Lubricants</td> <td>2,900</td> <td>4,290</td> <td>6,730</td> </tr> <tr> <td>Mission Support</td> <td>1,138</td> <td>1,206</td> <td>1,300</td> </tr> <tr> <td>PE TOTAL</td> <td>92,636</td> <td>98,058</td> <td>92,069</td> </tr> </tbody> </table>					FY97	FY98	FY99	Contracted Tasks	83,400	81,962	75,391	AFMTC Flight Tests	1,457	600	2,500	AEDC Altitude Tests	3,741	10,000	6,148	Petroleum/Oil/Lubricants	2,900	4,290	6,730	Mission Support	1,138	1,206	1,300	PE TOTAL	92,636	98,058	92,069																																											
	FY97	FY98	FY99																																																																							
Contracted Tasks	83,400	81,962	75,391																																																																							
AFMTC Flight Tests	1,457	600	2,500																																																																							
AEDC Altitude Tests	3,741	10,000	6,148																																																																							
Petroleum/Oil/Lubricants	2,900	4,290	6,730																																																																							
Mission Support	1,138	1,206	1,300																																																																							
PE TOTAL	92,636	98,058	92,069																																																																							
<p>(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u></p> <p>Performing Organizations:</p> <table border="1"> <thead> <tr> <th rowspan="2">Contractor or Government Performing Activity</th> <th rowspan="2">Contract Method/Type or Funding Vehicle</th> <th rowspan="2">Award or Obligation Date</th> <th rowspan="2">Performing Activity EAC</th> <th rowspan="2">Project Office EAC</th> <th rowspan="2">Total Prior to FY 1997</th> <th>Budget FY 1997</th> <th>Budget FY 1998</th> <th>Budget FY 1999</th> <th>Budget to Complete</th> <th>Total Program</th> </tr> <tr> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td colspan="11">Product Development Organizations</td> </tr> <tr> <td>GE-Evendale, OH</td> <td>CPAF</td> <td>Jan 98</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>37,820</td> <td>\$43,668</td> <td>\$35,954</td> <td>CONT</td> <td>CONT</td> </tr> <tr> <td>Pratt &amp; Whitney</td> <td>CPAF</td> <td>Jan 98</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>36,087</td> <td>31,874</td> <td>29,215</td> <td>CONT</td> <td>CONT</td> </tr> <tr> <td>GE-Lynn, MA</td> <td>CPFF</td> <td>Jan 98</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>5,457</td> <td>2,576</td> <td>6,825</td> <td>CONT</td> <td>CONT</td> </tr> <tr> <td>Allison</td> <td>CPFF</td> <td>Jan 98</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>1,230</td> <td>1,362</td> <td>1,429</td> <td>CONT</td> <td>CONT</td> </tr> </tbody> </table>				Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program						Product Development Organizations											GE-Evendale, OH	CPAF	Jan 98	NA	NA	NA	37,820	\$43,668	\$35,954	CONT	CONT	Pratt & Whitney	CPAF	Jan 98	NA	NA	NA	36,087	31,874	29,215	CONT	CONT	GE-Lynn, MA	CPFF	Jan 98	NA	NA	NA	5,457	2,576	6,825	CONT	CONT	Allison	CPFF	Jan 98	NA	NA	NA	1,230	1,362	1,429	CONT	CONT
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC							Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program																																																										
Product Development Organizations																																																																										
GE-Evendale, OH	CPAF	Jan 98	NA	NA	NA	37,820	\$43,668	\$35,954	CONT	CONT																																																																
Pratt & Whitney	CPAF	Jan 98	NA	NA	NA	36,087	31,874	29,215	CONT	CONT																																																																
GE-Lynn, MA	CPFF	Jan 98	NA	NA	NA	5,457	2,576	6,825	CONT	CONT																																																																
Allison	CPFF	Jan 98	NA	NA	NA	1,230	1,362	1,429	CONT	CONT																																																																

Project 1012

Page 4 of 5 Pages

Exhibit R-3 (PE 0207268F)

1310

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207268F Aircraft Engine Component  
Improvement Program (CIP)

1012

Product Development Organizations (Continued)

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Teledyne	CPFF	Jan 98	NA	NA	NA	1,134	1,207	730	CONT	CONT
Allied Signal	CPFF	Jan 98	NA	NA	NA	560	500	538	CONT	CONT
Williams	CPFF	Jan 98	NA	NA	NA	601	275	200	CONT	CONT
Sundstrand	CPFF	Jan 98	NA	NA	NA	511	500	500	CONT	CONT

Support and Management Organizations

In House Support					NA	1,138	1,206	1,300	CONT	CONT
Petroleum/Oil/ Lubricants					NA	2,900	4,290	6,730	CONT	CONT

Test and Evaluation Organizations

AFMTC-Edwards					NA	1,457	600	2,500	CONT	CONT
AFB, CA										
AEDC-Arnold					NA	3,741	10,000	6,148	CONT	CONT
AFB, TN										

Government Furnished Property: None

Subtotal Product Development					NA	83,400	81,962	75,391	CONT	CONT
Subtotal Support and Management					NA	4,038	5,496	8,030	CONT	CONT
Subtotal Test and Evaluation					NA	5,198	10,600	8,648	CONT	CONT
Total Project					NA	\$92, 636	\$98,058	\$92,069	CONT	CONT

Project 1012

Page 5 of 5 Pages

Exhibit R-3 (PE 0207268F)

1311

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207320F

UNCLASSIFIED

PE TITLE: Sensor Fuzed Weapons

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207320F Sensor Fuzed Weapons								1016	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
1016	Sensor Fuzed Weapon	18,664	16,437	3,551	0	0	0	0	0	48,169	
	Quantity of RDT&E Articles	4/\$1,600	4/\$1,600	0	0	0	0	0	0	8/3,200	

**(U) A. Mission Description and Budget Item Justification**

This project continues development of the Sensor Fuzed Weapon (SFW) Pre-Planned Product Improvement (P3I). The P3I improvements to the baseline SFW will enhance weapon performance against primary targets (land combat vehicles), targets with countermeasures, and potentially allow for use against alternative targets. The improvements will also enhance the performance of SFW when fitted with the Wind Corrected Munitions Dispenser (WCMD) kit and the anti-armor version of the Joint Standoff Weapon (JSOW). This program is in budget activity 7 - Operational System Development, because this activity funds improvements to the SFW, which is currently in production. SFW is an ACAT 1C program.

**(U) Acquisition Strategy:**

The SFW Pre-Planned Product Improvements (P3I) program is a 40 month R&D effort to enhance the BLU-108 submunition and projectile. This is a sole source Cost-Plus Award Fee (CPAF) contract for P3I to the current SFW submunition design and for incorporating the P3I design into the FY 1999 full rate production contract.

**(U) FY 1997 (\$ in Thousands):**

- (U) 17,918 Continued the P3I development, qualification, integration of the dual mode sensor and multi-mission warhead  
 - (U) 66 GFE (PBX-11 explosive fill)  
 - (U) 186 Conducted Test Analysis  
 - (U) 494 Program management support, includes travel, program office supplies and equipment, training and technical engineering support  
 - (U) \$18,664 Total

**(U) FY 1998 (\$ in Thousands):**

- (U) 10,344 Continue the P3I development, qualification, integration of the dual mode sensor and multi-mission warhead. Conduct munition tests.  
 - (U) 4,981 Conduct dual mode sensor and multi-mission warhead tests  
 - (U) 1,112 Program management support, includes travel, program office supplies and equipment, training and technical engineering support  
 - (U) \$16,437 Total

Project 1016

Page 1 of 5 Pages

Exhibit R-2 (PE 0207320F)

1313

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
1016

## 7 - Operational System Development

## 0207320F Sensor Fuzed Weapons

## (U) FY 1999 (\$ in Thousands):

- (U) 1,040 Complete the P3I development program with contractor test and evaluation; integrate P3I into the production program
- (U) 451 Program management support, includes travel, program office supplies and equipment, training and technical engineering support
- (U) 2,060 Conduct and complete CBU flight tests
- (U) \$3,551 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	18,695	19,804	3,622	53,067
(U) Appropriated Value	19,100	19,804		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-400	-705		
b. SBIR	-5	-2,662		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-31			
(U) Adjustments to Budget Years Since FY 1998 PB			-71	
(U) Current Budget Submit/FY 1999 President's Budget	18,664	16,437	3,551	48,169

## (U) Change Summary Explanation:

Funding: For the FY98 funds, \$420,000 is pending reprogramming to fund higher priorities and \$213,000 is pending for additional SBIR reduction.

Schedule: No Change

Technical: No Change

Project 1016

Page 2 of 5 Pages

Exhibit R-2 (PE 0207320F)

1314

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207320F Sensor Fuzed Weapons

1016

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) SFW Production, Procurement of Ammo, AF (Appn 3011) ; PE 0207320F	149,500	150,150	125,992	151,804	118,039	109,163	189,000	240,021	1,724,621
(U) Total	149,500	150,150	125,992	151,804	118,039	109,163	189,000	240,021	1,724,621

(U) D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Contract Award (FY96/Q3)												
(U) System Requirement Review (SRR) (FY96/Q4)												
(U) System Design Meeting												
(U) Design and Development of P3I												
(U) Trade Studies												
(U) Preliminary Design Review (PDR)												
(U) Detailed Design/Development Tests												
(U) Development Test Meeting												
(U) Critical Design Review (CDR)												
(U) Hardware Build/Qualification Tests												
(U) CBU Flight Tests												
(U) P3I ECP/FY99 Prod Contract Award												

Project 1016

Page 3 of 5 Pages

Exhibit R-2 (PE 0207320F)

1315

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

## 0207320F Sensor Fuzed Weapons

1016

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Major Contracts	17,918	10,344	1,040
(U) Support Contracts	317	587	177
(U) Program Office Support	177	525	274
(U) Test and Evaluation	186	4,981	2,060
(U) Government Furnished Equipment (GFE)	66	0	0
(U) Total	18,664	16,437	3,551

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Textron System Defense	CPAF	Oct 98	36,961	36,961	7,659	17,918	10,344	1,040	0	36,961
<u>Support and Management Organizations</u>										
ASC/YH	N/A	varius	N/A	N/A	84	177	587	177	0	1,025
Miscellaneous	CPAF	varius	N/A	N/A	0	317	525	274	0	1,116
<u>Test and Evaluation Organizations</u>										
46 OG/OGML	REO	Oct 98	N/A	N/A	1,774	186	4,981	2,060	0	9,001

Project 1016

Page 4 of 5 Pages

Exhibit R-3 (PE 0207320F)

1316

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207320F Sensor Fuzed Weapons

1016

## Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Property GFE (PBX-11)	MIPR	May 97	Oct 97	0	66	0	0	0	66
Army, Aberdeen									
Support and Management Property									
None									
Test and Evaluation Property									
None									
Subtotal Product Development				7,659	17,984	10,344	1,040	0	37,027
Subtotal Support and Management				84	494	1,112	451	0	2,141
Subtotal Test and Evaluation				1,774	186	4,981	2,060	0	9,001
Total Project				9,517	18,664	16,437	3,551	0	48,169

Project 1016

Page 5 of 5 Pages

Exhibit R-3 (PE 0207320F)

1317

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207325F

PE TITLE: Joint Air-to-Surface Standoff Missile

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207325F Joint Air-to-Surface Standoff Missile								4515	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4515	Joint Air-to-Surface Standoff Missile (JASSM)	160,692	123,460	132,870	104,434	34,067	4,913	0	0	588,036	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) In FY 1998, \$40,622 (after Congressional reductions) was appropriated in the JSLAM PE (64611F). Pending SecDef decision, funding may be executed by either JASSM or JSLAM.

(U) \* NOTE: Cost information is Source Selection Sensitive because of the competitive nature of the contract effort. This information is available through APPEO/WP.

(U) A. Mission Description and Budget Item Justification  
 The Joint Air-to-Surface Standoff Missile (JASSM) is a joint Air Force/Navy program with the Air Force as the lead service. This is an ACAT ID program to provide an affordable long range, conventional air-to-surface, autonomous precision guided, standoff cruise missile compatible with fighter and bomber aircraft and able to attack a variety of fixed or relocatable targets. Initial integration efforts are for the B-52H, F-16 Block 50 and F/A-18E/F. Objective aircraft include the B-1, B-2, F-15E, F-16 Block 40, F-117, P-3 and S-3. This descriptive summary reflects Air Force only funding. Although reflected in Budget Activity 7, Operational System Development, the program is currently in Budget Activity 5, Engineering and Manufacturing Development because its products are primarily research and development procured through advanced acquisition reform methods.

(U) Acquisition Strategy:  
 All major contracts within this Program Element were awarded through full and open competition. JASSM is an OSD flagship program under Cost as An Independent Variable (CAIV). This allows for competing contractors to have maximum trade space to develop an affordable missile that meets the three key performance parameters. Under CAIV, the program maintains a threshold unit cost of \$700 (BY \$95) and an objective unit cost of \$400 (BY \$95). JSLAM funds will be distributed in accordance with Congressional direction based on the results of the Analysis of Alternatives and SecDef determination.

(U) FY 1997 (\$ in Thousands):

- (U) \$131,543 Continued two selected PDRR contractors for JASSM weapon system development and hardware
- (U) \$ 11,611 Continued aircraft integration.
- (U) \$ 6,707 Continued flight test support for threshold aircraft, aircraft modifications, live fire test support, target construction.
- (U) \$ 7,839 Continue program office support contracts.
- (U) \$ 2,992 Continue mission support.
- (U) \$160,692 Total

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4515

## 7 - Operational System Development

0207325F Joint Air-to-Surface Standoff Missile

(U) FY 1998 (\$ in Thousands): NOTE: Amounts reflected below fund efforts through approximately 30 April 1998. Pending SecDef decision, JSLAM funding (\$40,622) could be made available for PDRR Phase II.

- (U) \$ 90,096 Continue PDRR Phase I contractors for JASSM through downselect.
- (U) \$ 13,154 Continue flight test support, aircraft modifications, live fire test support, target construction/rehab.
- (U) \$ 11,450 Continue aircraft integration.
- (U) \$ 5,677 Continue program support contracts.
- (U) \$ 2,083 Continue mission support.
- (U) \$ 1,000 Congressionally-directed alternate engine source study
- (U) \$123,460 Total

(U) FY 1999 (\$ in Thousands):

- (U) \$ 68,873 Initiate EMD.
- (U) \$ 40,643 Continue flight test support, aircraft modifications, live fire test support, target construction/rehab.
- (U) \$ 10,931 Continue aircraft integration.
- (U) \$ 10,523 Continue program support contracts.
- (U) \$ 1,900 Continue mission support.
- (U) \$132,870 Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget FY 1998 PB	160,958	203,321	135,542	588,036
(U) Appropriated Value	168,632	128,000		
(U) Adjustments to Appropriated Value				
a. Congressional Reductions	-3,551	-4,540		
b. SBIR	-4,123			
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-266		-2,672	
(U) Adjustments to Budget Years Since FY 1998 PB			132,870	588,036
(U) Current Budget Submit/FY 1999 President's Budget	160,692	123,460		

Project 4515

Page 2 of 7 Pages

Exhibit R-2 (PE 0207325F)

1320

UNCLASSIFIED

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207325F Joint Air-to-Surface Standoff Missile

4515

(U) Change Summary Explanation:

Funding: FY 1998 reduced by \$75,321 (\$32,300 eliminated from JASSM PE, \$43,021 allocated to new JSLAM PE). JSLAM assessed proportional amounts of Congressional general reductions of \$2,399 leaving \$40,622. FY99 funding reflects inflation adjustments.

Schedule: FY98 Congressional RDT&E reduction (\$32,300) drove program re-structure: PDRR now in two phases [competitive Phase I, June 1996 to April 1998; downselect to one contractor for Phase II, April 1998 (was July 1998)]; EMD start in November 1998 (was July 1998); Milestone II now September 1998 (was June 1998).

Technical: No change.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Missile Procurement	0	0	0	75,044	74,333	153,996	203,825	1,172,377	1,679,575
(U) Seek Eagle	0	0	0	8,002	2,291	10,200	0	0	20,493

## Related RDT&E:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) RDT&E PE 604611F, Joint Standoff Land Attack Missile (JSLAM)	0	40,622	0	0	0	0	0	0	40,622

(NOTE: Pending completion of Analysis of Alternatives, funding may be executed by JASSM or JSLAM.)

Project 4515

Page 3 of 7 Pages

Exhibit R-2 (PE 0207325F)

1321

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

**DATE**

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

**PE NUMBER AND TITLE**

**0207325F Joint Air-to-Surface Standoff Missile**

## PROJECT

4515

(U) D. <u>Schedule Profile</u>																	
		FY 1997				FY 1998			FY 1999								
		1	2	3		4	1	2	3	4	1	2	3	4			
(U)	Downselect to Single Contractor																
(U)	PDRR Phase I Completion																
(U)	PDRR Phase II Start																
(U)	Milestone II Approval																
(U)	PDRR Phase II Completion																
(U)	EMD Contract Award / Start																
(U)	DT&E Start																
(U)	B-52H Wind Tunnel Test					X											
(U)	F-16 C/D Wind Tunnel Test					X											
(U)	B-52H Software Dev/Test Start																
(U)	F-16 C/D Software Dev/Test Start							X									
(U)	F-16 C/D Software Dev/Test Completion							X									
(U)	F-16 C/D Ground & Flight Test Start																
(U)	B-52H Software Dev/Test Completion																
(U)	B-52H Ground & Flight Test Start																
(U)	B-52H Ground & Flight Test																X

Project 4515

Page 4 of 7 Pages

Exhibit R-2 (PE 0207325F)

1322

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE		
7 - Operational System Development			0207325F Joint Air-to-Surface Standoff Missile		
			FY 1997	FY 1998	FY 1999
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
(U) Major Contracts			131,543	90,096	68,873
(U) Associated Contracts			11,611	11,450	10,931
(U) Support Contracts			7,839	5,677	10,523
(U) In-House			2,992	2,083	1,900
(U) Test Support			6,707	13,154	40,643
(U) Congressionally-directed alternate engine source study				1,000	
(U) Total			160,692	123,460	132,870

Project 4515

Page 5 of 7 Pages

Exhibit R-3 (PE 0207325F)

1323

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4515

## 7 - Operational System Development

0207325F Joint Air-to-Surface Standoff Missile

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<b>Product Development Organizations</b>										
JASSM	C/CPFF/CPIF	Jun 96	**	**	18,637	131,543	90,096	68,873	73,474	382,623
<b>Development Contractors</b>										

\*\*Note: Contract cost information is Source Selection Sensitive because of the competitive nature of the contract effort. This information is available through AFPEO/WP.

## Support and Management Organizations

F-16 SPO	PO	Apr 96	N/A	N/A	210	1,853	2,600	2,000	21,906	28,569
B-52 SPO	PO	Sep 96	N/A	N/A	1,500	7,053	7,400	5,500	2,000	23,453
Other Acft SPOs	PO	Various	N/A	N/A	488	2,705	1,450	0	0	4,643
Sverdrup Tech Inc.	C/CPAF	Jan 96	N/A	N/A	1,097	2,277	2,948	2,387	3,257	11,966
Navy	MIPR	Jan 96	N/A	N/A	808	1,424	287	0	0	2,519
JASSM SPO/Other	Misc	Various	N/A	N/A	3,906	7,130	5,525	13,467	5,714	35,742

## Test and Evaluation Organizations

46TW	PO	Jan 96	N/A	N/A	954	6,707	13,154	40,643	37,063	98,521
------	----	--------	-----	-----	-----	-------	--------	--------	--------	--------

Project 4515

Page 6 of 7 Pages

Exhibit R-3 (PE 0207325F)

1324

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0207325F Joint Air-to-Surface Standoff Missile		4515	
Government Furnished Property: Not Applicable.					
Subtotal Product Development		18,637	131,543	90,096	68,873
Subtotal Support and Management		8,009	22,442	20,210	23,354
Subtotal Test and Evaluation		954	6,707	13,154	40,643
Total Project		27,600	160,692	123,460	132,870
				73,474	382,623
				32,877	106,892
				37,063	98,521
				143,414	588,036

Project 4515

Page 7 of 7 Pages

Exhibit R-3 (PE 0207325F)

Project 4515

Page 7 of 7 Pages

Exhibit R-3 (PE 0207325F)

1325

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207412F

PE TITLE: Theater Air Control System

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development****0207412F Theater Air Control System**

PROJECT

**485L**

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
485L Theater Air Control Sys Imp (TACSI)		589	393	440	487	471	460	451	Continuing	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification:**

Ground Theater Air Control System (GTACS) provides the means through which the Air Component Commander exercises control of his forces to accomplish his assigned mission. This program provides for major improvements to the existing Tactical Air Control System (TACS) which was designed in the 1960s and is now unsupportable. The GTACS RDT&E program consists primarily of the Modular Control Equipment (MCE) Pre-Planned Product Improvements (P3I) program which replaces obsolete equipment (operator consoles, shelters, computers, radios, etc.) in the GTACS. The modernization upgrades C2 interoperability, flexibility, mobility, communications and worldwide operations. The P3I program is structured into multiple phases. Phase one consisted of the integration of secure anti-jam UHF radios, an upgrade to the weapons control and Joint Tactical Air Operations data link software (S/W). These improvements have already been incorporated into the MCE production line. The current R&D includes the integration of a Joint Tactical Information Distribution System (JTIDS)/Tactical Digital Information Link-J (TADIL-J) capability, the integration of an Automated Air Tasking Order (AATO) capability, integration of secure anti-jam VHF (SINGARS) radios and upgrades to the Ground Mobile Forces/Satellite Communications digital communications interfaces. This program also includes production funding for JTIDS terminals, JTIDS Modules (JMs), JTIDS Interface Boxes (JIBs) and Operations Modules (OM) Interface Kits, all of which are required to integrate JTIDS/COMM into the MCE. The next planned phase includes a software interoperability upgrade to the TADIL-J Reissue 2 baseline, which works towards a Theater Missile Defense capability and the implementation of the Interim JTIDS Message Specification. This program is in budget activity 7 - Operational System Development because the Ground Theater Air Control System (GTACS) is a fielded, operational system currently undergoing major modifications/upgrades.

**(U) Acquisition Strategy:**

MCE OM development is complete, production is ongoing until fourth quarter, FY99. Current strategy is to develop and define requirements for the GTACS follow-on system, migrating to a Global Command and Control System (GCCS) platform. Further strategy is to work the residual tasks associated with the MCE OM production item.

Project 485L

Page 1 of 7 Pages

Exhibit R-2 (PE 0207412F)

1327

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207412F Theater Air Control System	485L	
(U) FY 1997	(\$ in Thousands)		
- (U)	274	Continued development/fielding of interoperability upgrades to MCE P3I system	
- (U)	100	Continued operator and maintainer training	
- (U)	215	Continued program support, test, and other miscellaneous efforts	
- (U)	589	Total	
(U) FY 1998	(\$ in Thousands)		
- (U)	130	Continue development/fielding of interoperability upgrades to MCE P3I systems	
- (U)	60	Continue development of follow-on system for migration to the Air Force GCCS	
- (U)	187	Continue program support, test, and other miscellaneous efforts	
- (U)	377	Total	
(U) FY 1999	(\$ in Thousands)		
- (U)	160	Continue development/fielding of interoperability upgrades to MCE P3I systems	
- (U)	40	Continue development of follow-on system for migration to the Air Force GCCS	
- (U)	231	Continue program support, test, and other miscellaneous efforts	
- (U)	431	Total	

Project 485L

Page 2 of 7 Pages

Exhibit R-2 (PE 0207412F)

1328

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207412F Theater Air Control System

485L

## B. Program Change Summary (\$ in Thousands)

Total  
Cost  
TBD

FY 1997 FY 1998 FY 1999

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. General Congressional Reductions

b. SBIR

c. Omnibus / Other Above Threshold Reprogramming

d. Below Threshold Reprogramming

e. Rescissions

(U) Adjustments to Budget since FY98 PB

(U) Current Budget Submission/FY 1999 President's Budget

(U) Change Summary Explanation:

Funding:

FY97: -\$12 for Appr Act Sec 8136, -\$1 for Section 8138, -\$7 for Section 8037(E).

FY99: -\$9 funding has been realigned to support other Air Force priorities

Schedule: None

Technical: None

Project 485L

Page 3 of 7 Pages

Exhibit R-2 (PE 0207412F)

1329

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
485L

## 7 - Operational System Development

0207412F Theater Air Control System

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement AF Total	9,441	27,434	26,064	24,199	19,149	19,999	19,988	Cont	TBD
Budget Activity 3, WSC 833040	4,149	22,252	20,813	19,545	19,149	19,555	19,554	Cont	TBD
Budget Activity 3, WSC 834010	0	0	0	0	0	0	0	0	3,020
Budget Activity 3, WSC 83790A	0	0	0	0	0	0	0	0	2,730
Budget Activity 6, WSC 838010	0	0	1,937	2,408	0	0	0	TBD	TBD
Budget Activity 4, WSC 84590A	0	0	0	0	0	0	0	0	6,166
Budget Activity 6, WSC 86190A	5,292	5,182	3,314	2,246	0	444	434	Cont	TBD

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
(U) MCE P3I OM Interface Kit Follow-on Production Award	1	2	3	4	1	2	4
(U) MCE P3I OM Interface Kit Article IOT&E							
(U) MCE P3I Initial Operational Capability (IOC)							
(U) JM Development Completed							
(U) GTACS Modernization							
(U) GCCS Migration							
(U) Program Support							

Project 485L

Page 4 of 7 Pages

Exhibit R-2 (PE 0207412F)

1330

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
7 - Operational System Development	0207412F Theater Air Control System			485L
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) Continue development fielding of interoperability upgrades to MCE P3I system	274	130	160	
(U) Operator and maintainer training	100	0	0	
(U) Develop follow-on system for migration to GCCS	0	60	40	
(U) Program Management Support	215	187	231	
(U) Total	589	377	431	

Project 485L

Page 5 of 7 Pages

Exhibit R-3 (PE 0207412F)

1331

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0207412F Theater Air Control System

PROJECT

485L

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>									
N/A									
<u>Support and Management Organizations</u>									
Computer Support				22	13	13			
Equipment Maintenance				6	6	6			
Miscellaneous (TDY, Supplies, Eq Purchase)				561	358	412			
<u>Test and Evaluation Organizations</u>									
N/A									

Project 485L

Page 6 of 7 Pages

Exhibit R-3 (PE 0207412F)

1332

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
7 - Operational System Development	0207412F Theater Air Control System		485L
Government Furnished Property: None			
Subtotal Product Development			
Subtotal Support and Management	589	377	431
Subtotal Test and Evaluation			
Total Project	589	377	431

Project 485L

Page 7 of 7 Pages

Exhibit R-3 (PE 0207412F)

1333

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207414F

UNCLASSIFIED

PE TITLE: Combat Intelligence System

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)										DATE	February 1998												
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT													
7 - Operational System Development		0207414F Combat Intelligence System								4773													
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost													
4773	Combat Intelligence System (CIS)	0	11,590	9,802	10,172	9,009	7,523	6,625	Continuing	TBD													
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0													
<p>(U) Note: This funding request was previously programmed across PEs 0604321F, 0207431F, and 0305158F. They have been consolidated here in PE 0207414F for program clarity and reporting efficiency.</p> <p>(U) <b>A. Mission Description and Budget Item Justification</b>            (U) Combat Intelligence System (CIS) is the Air Force's single, standard automated intelligence system optimizing both component and unit-level intelligence functions to provide warfighters with the most accurate and timely intelligence data available. CIS is the core capability for automating the receipt, correlation, and dissemination of intelligence information to a variety of intelligence and operational systems which support combat planning and execution. As the intelligence segment to Theater Battle Management Core Systems (TBMCS), it provides an automated capability at the component and unit levels to rapidly receive and process all-source intelligence data to support Contingency Theater Automated Planning System (CTAPS). CIS builds and maintains in-theater situational awareness during deployment to the theater and provides indications and warning support after arrival. CIS is electronically interoperable and compatible with other intelligence systems, providing an integrated network capable of intelligence support to decision makers, battle planners, mission planners, and warfighters. This program is in budget activity 5, Engineering and Manufacturing Development, because it develops new capabilities to upgrade current systems.</p> <p>(U) <b>Acquisition Strategy:</b> Full and open competition has led to a cost plus award fee contract with Lockheed Martin Command and Control Systems (Colorado Springs, CO) to develop capabilities and integrate this system and software.</p> <p>(U) <b>FY 1997:</b> Included in PEs 0604321F, 0207431F, and 0305158F.</p> <p>(U) <b>FY 1998</b></p> <table border="0"> <tr> <td>-</td> <td>(U) \$10,167</td> <td>Complete software development for TBMCS Version 1.0 release, and initiate TBMCS software Version 2.0 development</td> </tr> <tr> <td>-</td> <td>(U) \$ 900</td> <td>Implement results of studies for CIS Intelligence Interoperability</td> </tr> <tr> <td>-</td> <td>(U) \$ 523</td> <td>System engineering and support</td> </tr> <tr> <td>-</td> <td>(U) \$11,590</td> <td><b>Total</b></td> </tr> </table>												-	(U) \$10,167	Complete software development for TBMCS Version 1.0 release, and initiate TBMCS software Version 2.0 development	-	(U) \$ 900	Implement results of studies for CIS Intelligence Interoperability	-	(U) \$ 523	System engineering and support	-	(U) \$11,590	<b>Total</b>
-	(U) \$10,167	Complete software development for TBMCS Version 1.0 release, and initiate TBMCS software Version 2.0 development																					
-	(U) \$ 900	Implement results of studies for CIS Intelligence Interoperability																					
-	(U) \$ 523	System engineering and support																					
-	(U) \$11,590	<b>Total</b>																					

Project 4773

Page 1 of 5 Pages

Exhibit R-2 (PE 0207414F)

1335

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207414F Combat Intelligence System	4773	
(U) FY 1999			
- (U) \$ 6,276	Continue software development for TBMCS V2.0 release		
- (U) \$ 3,138	Initiate TBMCS software version 3.0 planning and design		
- (U) \$ 388	Continue studies for CIS Intelligence Interoperability		
- (U) \$ 9,802	Total		
(U) B. Program Change Summary (\$ in Thousands)			
(U) Previous President's Budget (FY 1998 PB)		FY 1998	FY 1999
(U) Appropriated Value		12,267	10,499
(U) Adjustments to Appropriated Value		12,267	
a. Cong Reductions		-425	
b. Small Business Innovative Research		-252	
c. Omnibus/Other Above Threshold Reprogramming			
(U) Adjustments to Budget Years Since FY 1998 PB			-697
(U) Current Budget Submit/FY 1999 President's Budget		0*	**9,802
			TBD
(U) Change Summary Explanation:			
<p>Funding: * FY97: Funding was appropriated in PEs 0604321F, 0207431F, and 0305158F.  ** FY98 and FY99: Funds were budgeted in PEs 0604321F, 0207431F, and 0305158. They have been consolidated for clarity and reporting efficiency. FY98 is in BA6-EMD.</p> <p>Schedule: Not Applicable</p> <p>Technical: Not Applicable</p>			

Project 4773

Page 2 of 5 Pages

Exhibit R-2 (PE 0207414F)

1336

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207414F Combat Intelligence System

4773

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete Cont	Total Cost TBD
(U) Other Procurement AF, Budget Activity 5, Project 642758, PE 0207414F	9,705	18,043	12,819	18,149	14,107	11,587	11,582		TBD
(U) Other Procurement AF, Budget Activity 7, Project 671004, PE 0207431F	4,293	5,487	4,886	6,666	5,189	4,813	4,829		TBD
(U) Other Procurement AF, Budget Activity 7, Project 674395, PE 0305158F	1,951	0	0	0	0	0	0	0	2,919
(U) O&M, PE 0207431, CAIS	3,479	3,330	3,353	4,326	5,371	5,488	5,615		TBD
<b>Related RDT&amp;E</b>									
(U) RDT&E, PE 0207431F, CAIS	7,373	0	0	0	0	0	0	0	7,373
(U) RDT&E, PE 0305158F, Project 4394	1,949	0	0	0	0	0	0	0	3,939
(U) RDT&E, PE 0604321F, CIS-EMD	2,786	0	0	0	0	0	0	0	16,443

## (U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
(U) CIS 1.2 Release	X					
(U) TBMCS V1.0 Preliminary Design Review (PDR)						
(U) TBMCS V1.0 In Plant Test						
(U) TBMCS V1.0 Release						
(U) TBMCS V2.0 PDR						

Project 4773

Page 3 of 5 Pages

Exhibit R-2 (PE 0207414F)

1337

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207414F Combat Intelligence System

4773

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software Development	0	11,067	9,414
(U) Engineering Support	0	523	388
(U) Total	0	11,590	9,802

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Lockheed Martin	SS/CPAF	Oct 95	TBD	TBD	0	0	11,067	9,414	Cont.	TBD
Cmd & Ctrl Systems										
Support and Management Organizations										
TEMS	Time & Mtrls	Various	n/a	TBD	0	0	200	188	Cont.	TBD
MITRE	Fixed Price	Various	n/a	TBD	0	0	223	200	Cont.	TBD
Test and Evaluation Organizations - Not Applicable										
Test Support	Project Order	Various	n/a	TBD	0	0	100	0	Cont.	TBD
Government Furnished Property: Not Applicable										

Project 4773

Page 4 of 5 Pages

Exhibit R-3 (PE 0207414F)

1338

UNCLASSIFIED

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
7 - Operational System Development	0207414F Combat Intelligence System				4773
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>					
		<u>Total</u>			
		<u>Prior to</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>FY 1997</u>	<u>FY 1997</u>	<u>FY 1998</u>	<u>Complete</u>
					<u>Program</u>
Subtotal Product Development		0	0	11,067	9,414
Subtotal Support and Management		0	0	423	388
Subtotal Test and Evaluation		0	0	100	0
<b>Total Project</b>		0	0	<b>11,590</b>	<b>9,802</b>
					<b>Cont.</b>
					<b>Cont.</b>
					<b>Cont.</b>
					<b>TBD</b>
					<b>TBD</b>
					<b>TBD</b>
					<b>TBD</b>

Project 4773

Page 5 of 5 Pages

Exhibit R-3 (PE 0207414F)

1339

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207417F

UNCLASSIFIED

PE TITLE: Airborne Warning &amp; Control System (AWACS)

BUDGET ACTIVITY		RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE						PROJECT		
7 - Operational System Development		0207417F Airborne Warning & Control System (AWACS)						411L		
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
411L Airborne Warning & Control System (AWACS)	55,005	43,606	28,189	26,015	36,423	22,375	58,965	TBD	TBD	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**

This program develops and integrates system improvements which enable the E-3 AWACS to remain an effective, survivable airborne surveillance system for command and control of tactical forces and for strategic defense of the U.S. These improvements include Electronic Support Measures (ESM), Central Computer Memory Upgrade, Joint Tactical Information Distribution System (JTIDS) Class 2H/TADIL J and NAVSTAR Global Positioning System (GPS) integrated navigation (GINS) (collectively known as Block 30/35); the Radar System Improvement Program (RSIP); the Computers and Displays (C&D) upgrade (an Extend Sentry effort); Cruise Missile Defense and various concept exploration and program definition/risk reduction efforts such as DII-GCCS compliance and incremental plug-and-play software upgrades through spiral development. RSIP will increase radar reliability and maintainability, restore required E-3 surveillance capability against the evolving threats posed by low radar cross section fighters and cruise missiles, improve electronic counter countermeasures (ECCM), and enhance man-machine interface, while Extend Sentry is a collection of 58 projects that target investment in three areas. Extend Sentry prevents grounding of aircraft, buys back aircraft from maintenance downtime, and corrects deficiencies to meet operational requirements. Only the C&D project is currently funded. Test System 3 (TS-3)/AWACS Development and Production Tests (ADAPT) Support - includes maintenance for the government owned test aircraft and labs located at the contractor's facility. Category of research: Operational Systems Development, Budget Activity 7. AWACS is a fielded, operational system currently undergoing major modifications/block upgrades/continuing sustainment.

**(U) Acquisition Strategy:**

Block 30/35: ESM is joint development with NATO. Priced FPIF options with Boeing for ESM and 30/35 Group A hardware. CC-2E contract with LORAL Federal Systems with fixed price options. JTIDS and GPS acquired via respective program office-awarded contracts. RSIP is a cooperative development with NATO. Boeing is prime integrating contractor, Northrup-Grumman is the subcontractor for radar equipment items. FFP contract with priced options through FY99 is sole source to Boeing for production. Extend Sentry acquisition strategy approved, contract vehicle awarded, and tasks added as funding is made available.

Project 411L

Page 1 of 7 Pages

Exhibit R-2 (PE 0207417F)

1341

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	411L
7 - Operational System Development		0207417F Airborne Warning & Control System (AWACS)	
<p>(U) FY 1997 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$ 105 Blk 30/35 EMD contract close out actions.</li> <li>- (U) \$27,540 Computers &amp; Displays and Extend Sentry efforts</li> <li>- (U) \$ 8,406 Offensive Counter Air (OCA) efforts.</li> <li>- (U) \$18,954 AWACS Development and Production Tests (ADAPT) support and program sustaining efforts</li> <li>- (U) \$55,005 Total</li> </ul> <p>(U) FY 1998 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$14,573 Computers &amp; Displays and Extend Sentry efforts</li> <li>- (U) \$13,174 Cruise Missile Defense</li> <li>- (U) \$15,859 ADAPT support and program sustaining efforts</li> <li>- (U) \$43,606 Total</li> </ul> <p>(U) FY 1999 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$ 5,944 Systems Architect</li> <li>- (U) \$7,500 Cruise Missile Defense</li> <li>- (U) \$14,745 ADAPT support and program sustaining efforts</li> <li>- (U) \$28,189 Total</li> </ul>			

Project 411L

Page 2 of 7 Pages

Exhibit R-2 (PE 0207417F)

1342

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																																																																																		
BUDGET ACTIVITY	PE NUMBER AND TITLE																																																																																				
7 - Operational System Development	0207417F Airborne Warning & Control System (AWACS)	February 1998	411L																																																																																		
<p>(U) B. <u>Program Change Summary (\$ in Thousands)</u></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 1998 PB)</td> <td>78,635</td> <td>46,807</td> <td>29,266</td> <td>TBD</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>82,559</td> <td>46,807</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    a. Congressional General Reductions</td> <td>(1,929)</td> <td>(2,038)</td> <td></td> <td></td> </tr> <tr> <td>    b. SBIR</td> <td>(1,995)</td> <td>(1,163)</td> <td></td> <td></td> </tr> <tr> <td>    c. Omnibus or Other Above Threshold Reprogram</td> <td>(11,000)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    d. Below Threshold Reprogramming</td> <td>(12,630)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    e. Rescissions</td> <td></td> <td></td> <td>(1,077)</td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Since FY98 PB</td> <td></td> <td>43,606</td> <td>28,189</td> <td>TBD</td> </tr> <tr> <td>(U) Current Budget Submit/FY 1999 President's Budget</td> <td>55,005</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) <u>Change Summary Explanation:</u></p> <p>Funding:</p> <p>FY97: Appropriations Act included a \$25M add to begin an E-3 re-engining program of this 1.4 went towards Congressional general reductions, 12.630 was rescinded by Congress and 11.000 was reprogrammed for OMNIBUS.</p> <p>FY98: \$297K of the total \$43.606M is on withhold pending reprogramming for higher priorities.</p> <p>FY99: 1.077M reduction reflects internal inflation adjustment.</p> <p>Schedule: None.</p> <p>Technical: None.</p> <p>(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To Complete</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>(U) Aircraft Procurement, AF, BA-5 AWACS Mod</td> <td>127,652</td> <td>114,181</td> <td>97,869</td> <td>105,423</td> <td>65,980</td> <td>88,173</td> <td>Cont</td> <td>TBD</td> </tr> <tr> <td>(U) Other Procurement, AF</td> <td>0</td> <td>2,627</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>Cont</td> <td>TBD</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Total Cost	(U) Previous President's Budget (FY 1998 PB)	78,635	46,807	29,266	TBD	(U) Appropriated Value	82,559	46,807			(U) Adjustments to Appropriated Value					a. Congressional General Reductions	(1,929)	(2,038)			b. SBIR	(1,995)	(1,163)			c. Omnibus or Other Above Threshold Reprogram	(11,000)				d. Below Threshold Reprogramming	(12,630)				e. Rescissions			(1,077)		(U) Adjustments to Budget Since FY98 PB		43,606	28,189	TBD	(U) Current Budget Submit/FY 1999 President's Budget	55,005					FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total	(U) Aircraft Procurement, AF, BA-5 AWACS Mod	127,652	114,181	97,869	105,423	65,980	88,173	Cont	TBD	(U) Other Procurement, AF	0	2,627	0	0	0	0	Cont	TBD
	FY 1997	FY 1998	FY 1999	Total Cost																																																																																	
(U) Previous President's Budget (FY 1998 PB)	78,635	46,807	29,266	TBD																																																																																	
(U) Appropriated Value	82,559	46,807																																																																																			
(U) Adjustments to Appropriated Value																																																																																					
a. Congressional General Reductions	(1,929)	(2,038)																																																																																			
b. SBIR	(1,995)	(1,163)																																																																																			
c. Omnibus or Other Above Threshold Reprogram	(11,000)																																																																																				
d. Below Threshold Reprogramming	(12,630)																																																																																				
e. Rescissions			(1,077)																																																																																		
(U) Adjustments to Budget Since FY98 PB		43,606	28,189	TBD																																																																																	
(U) Current Budget Submit/FY 1999 President's Budget	55,005																																																																																				
	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total																																																																													
(U) Aircraft Procurement, AF, BA-5 AWACS Mod	127,652	114,181	97,869	105,423	65,980	88,173	Cont	TBD																																																																													
(U) Other Procurement, AF	0	2,627	0	0	0	0	Cont	TBD																																																																													

Project 411L

Page 3 of 7 Pages

Exhibit R-2 (PE 0207417F)

1343

UNCLASSIFIED

DATE	RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)
February 1998	

PE NUMBER AND TITLE	PROJECT
0207417F Airborne Warning & Control System (AWACS)	411L

(U) D. <u>Schedule Profile</u>	FY 1997		4	1	FY 1998		4	1	FY 1999		4
	1	2			3	2			3	2	
(U) RSIP IOT & E Complete			*								
(U) RSIP MSIII Decision			*								
(U) RSIP Trial Install Start											
(U) RSIP RAA 3QTR FY00						X					
(U) RSIP KIT DELIVERY (#1)						X					
(U) RSIP KIT DELIVERY (#2)							X				
(U) RSIP KIT DELIVERY (#3)									X		
(U) RSIP KIT DELIVERY (#4)											X
(U) RSIP KIT DELIVERY (#5) 1QTR FY00											
(U) BLK 30/35 Support capability - I Level			*								
(U) - D Level							X				
(U) BLK 30/35 RAA						X					
(U) BLK 30/35 IOC						X					

\* Denotes completed events  
X Denotes planned events

Project 411L

Page 4 of 7 Pages

Exhibit R-3 (PE 0207417F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
7 - Operational System Development	0207417F Airborne Warning & Control System (AWACS)				411L
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) Contracts		47,513	39,562	25,914	
(U) MITRE/TEMS		5,318	2,947	1,670	
(U) GFE		250			
(U) Travel		982	305	310	
(U) Other		942	792	295	
(U) Total		55,005	43,606	28,189	

Project 411L

Page 5 of 7 Pages

Exhibit R-3 (PE 0207417F)

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0207417F Airborne Warning & Control System  
(AWACS)PROJECT  
411L

## 7 - Operational System Development

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Total Program
<u>Product Development Organizations</u>									
(U) Boeing(RSIP)	C/FPIF	9/89	88,500	93,517	93,517	0	0	0	93,517**
(U) WECO(RSIP)	C/FPIF	9/89	327,400	306,900	259,155	0	0	0	259,155**
(U) Boeing(Blk 30/35)	SS/FPIF	5/87	N/A	N/A	291,667	105	0	0	291,772**
(U) Extend Sentry / Systems Architect	Multiple	N/A*	N/A	N/A	15,734	27,540	14,573	5,944	TBD
(U) Offensive Counter Air/CMD	Studies	N/A	N/A	N/A	29,368	8,406	13,174	7,500	TBD

\* N/A based on Extend Sentry Acquisition Strategy which includes multiple contracts with multiple organizations with overlapping and continuing performance periods.

\*\* Total Program does not include NATO funds and covers contract plus ECPs.

Support and Management Organizations

(U) Support/TEMS

MITRE/GFE, Travel &amp;

Other

553,227 7,492 4,044 2,275 TBD

Test and Evaluation Organizations

(U) Test System-3 ADAPT

Contract/

Other test Activities

33,800 11,462 11,815 12,470 TBD

Project 411L

Page 6 of 7 Pages

Exhibit R-3 (PE 0207417F)

1346

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207417F Airborne Warning & Control System  
(AWACS)

411L

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	------------------

## (U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Government Furnished Property: None

	Total Prior to FY97	Budget FY 1997	Budget FY 1998	Budget FY 1999	Total Program
Subtotal Product Development	689,441	36,051	27,747	13,444	TBD
Subtotal Support and Management	553,227	7,492	4,044	2,275	TBD
Subtotal Test and Evaluation	33,800	11,462	11,815	12,470	TBD
Total Project	1,276,468	55,005	43,606	28,189	TBD

Project 411L

Page 7 of 7 Pages

Exhibit R-3 (PE 0207417F)

1347

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207423F

UNCLASSIFIED

PE TITLE: Advanced Communications Systems

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0207423F Advanced Communications Systems									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		1,646	2,728	2,348	2,916	2,947	2,991	3,047	Continuing	TBD	
1013 Theater Deployable Communications (TDC)		1,450	2,539	2,131	2,694	2,723	2,991	3,047	Continuing	TBD	
2982 Anti-Jam Radio Communications		196	189	217	222	224	0	0	0	20,121	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Descriptions and Budget Item Justification**

The Advanced Communication Systems program procures commercially available ground communications equipment for deployment to theaters of operation and develops and procures jam resistant ultra high frequency (UHF) and very high frequency (VHF) frequency-hopping tactical radios. The HAVE QUICK UHF radios provide the primary Air Force and DOD UHF Electronic Counter-Countermeasures (ECCM) voice communications. SINGGARS (Single Channel Ground and Airborne Radio System) provides anti-jam, VHF frequency-hopping voice and data communications and is the primary means of ECCM communications between Air Force, Army, and USMC aircraft and ground units involved in close air support and joint battlefield operations. The Theater Deployable Communications (TDC) program provides funding for the research, development, test and evaluation for the modernization of operational deployable communications, and integration of COTS equipment that support tactical air operations in a combat environment. This includes the integration of deployable communications equipment for active duty, guard and reserve forces. Equipment will be fielded at wings, combat communications squadrons, AFSOC and AMC communication units and Theater Air Control System units. RDT&E funds in this program element are used to examine appropriate emerging technologies; provide software development support for the fielded HAVE QUICK family of radios; and determine and resolve integration issues pertaining to commercial-off-the-shelf (COTS) equipment, making this program budget activity 7, Operational System Development.

**(U) Acquisition Strategy:** There are three (3) contracts within this Program Element; two contracts for TDC (the Lightweight Multiband Satellite Terminals (LMST) and the Integrated Communication Access Packages (ICAP)), and one for PACER SPEAK. All contracts within this Program Element are firm fixed price (FFP) and were awarded after full open competition. (When restricted technologies are involved, foreign competition is not allowed.)

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0207423F Advanced Communications Systems

## 7 - Operational System Development

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	1,646	2,966	2,895
(U) Adjustments to Appropriated Value	1,822	2,966	
a. Congressional Reductions	-137	-174	
b. Small Business Innovative Research	-39	-64	
c. Omnibus and Other Above Threshold Reprogramming			
d. Below Threshold Reprogramming			
e. Rescissions			
Adjustment to Budget Years Since FY 1998 President Budget			-547
(U) Current Budget Submit /FY 1999 President's Budget	1,646	2,728	2,348

## (U) Change Summary Explanation:

Funding: N/A

Schedule: N/A

Technical: N/A

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

## 0207423F Advanced Communications Systems

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement AF, Budget Activity 3, Weapon System Code 837100, PE 0207423F	62,471	32,685	31,064	30,726	86,551	89,917	139,685	0	TBD
(U) Other Procurement AF, Budget Activity 3, Weapon System Code 837290, PE 0207423F	2,270	3,844	2,518	2,330	2,115	104	104	0	8,478
(U) Aircraft Procurement AF, Budget Activity 5, Weapon System Code OTHACR, PE 0207423F	352	0	0	0	0	0	0	0	22,227
(U) Operations and Maintenance AF, PE 0207422F	1,438	2,155	3,124	4,168	5,238	5,336	5,438	Cont.	TBD
(U) Operational and Maintenance AF PE 0207423F									

Other Advanced Communication Systems Programs

- PACER SPEAK Operates the Air Force Air Request Net (AFARN), which is the principal means of communications through which theater forces plan, request, coordinate, and control immediate close air support (CAS), reconnaissance, and airlift requests. The AFARN is operated by the Tactical Air Control Parties (TACPs).
- HAVE QUICK Frequency-hopping UHF radio that provides jam-resistant voice and data communications.
- SINGGARS Secure, jam-resistant VHF frequency-hopping voice and data communications system that can be configured in ground and airborne modes.
- Digital Communications Terminal (DCT) The DCT is used for message generation and transmission over the AFARN by land maneuver units.

(U) D. Schedule Profile: See individual projects

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE February 1998							
7 - Operational System Development		PROJECT 1013							
		PE NUMBER AND TITLE 0207423F Advanced Communications Systems							
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete
1013 Theater Deployable Communications (TDC)		1,450	2,539	2,131	2,694	2,723	2,991	3,047	Continuing
									Total Cost TBD

**(U) A. Mission Description and Budget Item Justification**

As clearly demonstrated during Desert Shield/Desert Storm (DS/DS), today's generation of deployable communications equipment is bulky, inflexible in design and does not meet today's projected airlift availability or interoperability standards. Air Force planning calls for initial communications assets to be in place prior to the arrival of flying forces. Deployment priorities for DS/DS did not allow timely arrival of communications assets. This program will complete joint interoperability certification testing, begin development and implementation of integrated network management software, and to support field activities and conduct integration activities. This program also emphasizes COTS equipment to augment existing assets or replace tactical communications packages. The resulting Theater Deployable Communications (TDC) packages will reduce airlift requirements and be designed to support a wide range of operational scenarios during deployment/employment, expansion and sustaining operations. Communications packages will be used by theater air control, combat communications, special operations units, deployed air wings, and mobility forces worldwide.

**(U) FY 1997 (\$ in Thousands):**

- (U) \$356 Continue communications architecture planning.  
 - (U) \$457 Continue development of automation tools  
 - (U) \$637 Continue field interoperability and integration activities  
 - (U) \$1,450 Total

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207423F Advanced Communications Systems

1013

## (U) FY 1998 (\$ in Thousands):

- (U) \$436 Continue communications architecture planning  
 - (U) \$523 Continue development of automation tools  
 - (U) \$1,280 Continue field interoperability and integration activities  
 - (U) \$300 Start production improvement and interface development  
 - (U) \$2,539 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$299 Continue communications architecture planning  
 - (U) \$490 Continue development of automation tools  
 - (U) \$1,013 Continue field interoperability and integration activities  
 - (U) \$329 Continue production improvement and interface development  
 - (U) \$2,131 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget (FY 1998 PB)	1,450	2,766	2,674
(U) Appropriated Value	1,622	2,766	
(U) Adjustments to Appropriated Value			
a. Congressional Reductions	-133	-167	
b. Small Business Innovative Research	-39	-60	
c. Omnibus and Other Above Threshold Reprogramming			-543
(U) Adjustment to Budget Years Since FY 98 President Budget			
(U) Current Budget Submit/FY 1999 President's Budget	1,450	2,539	2,131

Project 1013

Page 5 of 14 Pages

Exhibit R-2 (PE 0207423F)

1353

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998						
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT							
7 - Operational System Development	0207423F Advanced Communications Systems	1013							
(U) Change Summary Explanation:									
Funding:	N/A								
Schedule:	N/A								
Technical:	N/A								
(U) C. Other Program Funding Summary (\$ in Thousands)									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont.	Total Cost TBD
(U) Other Procurement AF, Budget Activity 3, Weapon System Code 837100, PE 0207423F	54,456	29,155	27,342	26,838	75,999	79,190	128,876		TBD
(U) Other Procurement AF, Budget Activity 3, Weapon System Code 86190A, PE 0207423F,	2,270	4,556	2,450	2,258	2,039	100	99	Cont.	TBD
(U) Operations and Maintenance AF, PE 0207422F	1,438	2,155	3,124	4,168	5,238	5,336	5,438	Cont.	TDB

Project 1013

Page 6 of 14 Pages

Exhibit R-2 (PE 0207423F)

1354

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207423F Advanced Communications Systems

1013

(U) D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
1013 Theater Deployable Comm												
(U) Acquisition Milestones												
LMST Milestone III												
ICAP Milestone III												
(U) Production SATCOM Contract												
Award (Awarded AUG 95)												
(U) Production SATCOM Deliveries Start	*											
(U) Production Contract for Integrated												
Communication Access Packages	*											
(ICAP) Award (Awarded OCT 96)												
(U) Production of Integrated												
Communications Access Packages												
(ICAP) Deliveries Start												
(U) Complete SATCOM (OT)				*								
(U) Complete ICAP (OT)										X		

\* denotes completed event

Project 1013

Page 7 of 14 Pages

Exhibit R-2 (PE 0207423F)

1355

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
1013

## 7 - Operational System Development

0207423F Advanced Communications Systems

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software Support	457	902	786
(U) Engineering Support	356	400	294
(U) Integration Activities	580	1,167	981
(U) Travel	40	55	60
(U) Miscellaneous	17	15	10
(U) Total	1,450	2,539	2,131

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Various							1,069	636	Cont	Cont
Support and Management Organizations										
MITRE	FFP	OCT 96	TBD	TBD	1713	976	980	1000	Cont	Cont
TEMS	FFP	Varies			474	490	495	Cont	Cont	Cont
Test and Evaluation Organizations										
Air Force Test & Evaluation Command	TBD									

Project 1013

Page 8 of 14 Pages

Exhibit R-3 (PE 0207423F)

1356

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										
BUDGET ACTIVITY					DATE		PROJECT			
7 - Operational System Development					0207423F Advanced Communications Systems		1013			
PE NUMBER AND TITLE										
Government Furnished Property: Not Applicable										
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total		Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
				Prior to FY 1997						
Product Development Property										
N/A										
Support and Management Property										
N/A										
Test and Evaluation Property										
N/A										
Subtotal Product Development										
				0	0	0	0	0	0	Cont
Subtotal Support and Management				1713	1450	2539	2131	2131	Cont	Cont
Subtotal Test and Evaluation				0	0	0	0	0	0	
Total Project				1713	1450	2539	2131	2131	Cont	Cont

Project 1013

Page 9 of 14 Pages

Exhibit R-3 (PE 0207423F)

Project 1013

Page 9 of 14 Pages

Exhibit R-3 (PE 0207423F)

1357

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207423F Advanced Communications Systems

2982

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2982 Anti-Jam Radio Communications	196	189	217	222	224	0	0	0	20,121

(U) A. Mission Description and Budget Item Justification

The fast paced development of new frequency hopping radio technologies by potentially hostile nations dictates that the U.S. maintains a technological lead. Ultra high frequency (UHF) frequency hopping voice radios are needed for jam resistant communications between tactical aircraft and airborne and ground control elements. The HAVE QUICK wave form used in these radios is the NATO standard for UHF anti-jam communications. The HAVE QUICK UHF radios provide the primary Air Force and DOD UHF Electronic Counter-Countermeasures (ECCM) voice communications. SINGGARS (Single Channel Ground and Airborne Radio System) provides anti jam, very high frequency (VHF) frequency hopping radios and data communications and is the primary means of ECCM communications between Air Force, Army, USMC aircraft and ground units involved in close air support and joint battlefield operations.

## (U) FY 1997 (\$ in Thousands):

- (U) \$50 Completed software support for the HAVE QUICK II radios.  
 - (U) \$96 Continued to investigate improvements in anti-jam performance and other anti-jam techniques.  
 - (U) \$50 Completed support of SINGGARS Phase II qualification testing and support platform integration analyses.  
 - (U) \$196 Total

## (U) FY 1998 (\$ in Thousands):

- (U) \$89 Continue to investigate improvements in anti-jam performance and other anti-jam techniques.  
 - (U) \$100 Begin to investigate decrease in air traffic control channel bandwidth and modulation techniques.  
 - (U) \$189 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$96 Continue to investigate improvements in anti-jam performance and other anti-jam techniques.  
 - (U) \$121 Continue to investigate decrease in air traffic control channel bandwidth and modulation techniques.  
 - (U) \$217 Total

Project 2982

Page 10 of 14 Pages

Exhibit R-2 (PE 0207423F)

1358

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207423F Advanced Communications Systems

2982

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget (FY 1998 PB)	196	200	221
(U) Appropriated Value	200	200	
(U) Adjustments to Appropriated Value			
a. Congressional Reductions	-4	-7	
b. Small Business Innovative Research		-4	
c. OMINIBUS and Other Above Threshold Reprogramming			
(U) Adjustment to Budget Year Since FY 1998 President Budget			-4
(U) Current Budget Submit/ FY 1999 President's Budget	196	189	217

## (U) Change Summary Explanation:

Funding: N/A

Schedule: N/A

Technical: N/A

Project 2982

Page 11 of 14 Pages

Exhibit R-2 (PE 0207423F)

1359

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207423F Advanced Communications Systems

2982

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost TBA
(U) Other Procurement AF, Budget Activity 3, Weapon System Code 837100, PE 0207423F	8,015	3,530	3,722	3,886	10,552	10,727	10,809	0	
(U) Aircraft Procurement AF Budget Activity 5, Weapon System Code OTHACF, PE 0207423F	512	0	0	0	0			0	23,230

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
(U) HQ II Software Support Efforts	1	4	1	3	4	2	4
(U) Platform Integration analyses	*						
(U) Investigate anti-jam improvements	*						
(U) Analyze decrease in ATC bandwidth			X				

\* denotes completed event

Project 2982

Page 12 of 14 Pages

Exhibit R-2 (PE 0207423F)

1360

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207423F Advanced Communications Systems

2982

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) a. Software Support	46	49	50
(U) b. Engineering Support	28	28	30
(U) c. Evaluation Analysis	77	73	78
(U) d. Test and Evaluation	20	25	25
(U) e. Travel	13	14	20
(U) f. R&D Centers Payments	0	0	0
(U) g. Miscellaneous	12	0	14
(U) Total	196	189	217

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
N/A										
Support and Management Organizations										
MITRE	FFP	OCT 96	TBD	TBD	108.5	125	119	131	Cont	Cont
TEMS	FFP	Varies				71	70	86		
Test and Evaluation Organizations										
AFOTEC	TBD									

Project 2982

Page 13 of 14 Pages

Exhibit R-3 (PE 0207423F)

1361

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT							
7 - Operational System Development		0207423F Advanced Communications Systems			2982							
Government Furnished Property: Not Applicable												
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program			
Product Development Property												
NA												
Support and Management Property												
N/A												
Test and Evaluation Property												
TBD												
Subtotal Product Development												
Subtotal Support and Management							109	196	189	217	446	20,021
Subtotal Test and Evaluation							0	0	0	0		
Total Project							109	196	189	217	446	20,021

Project 2982

Page 14 of 14 Pages

Exhibit R-3 (PE 0207423F)

Project 2982

Page 14 of 14 Pages

Exhibit R-3 (PE 0207423F)

1362

UNCLASSIFIED

PE NUMBER: 0207438F

UNCLASSIFIED

PE TITLE: Theater Battle Management (TBM) C4I

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0207438F Theater Battle Management (TBM) C4I									
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		32,712	24,778	27,292	24,174	19,854	13,228	13,834	0	TBD	
3330	Cmd Ntrl Info Process Sys (C2IPS)	5,469	4,426	14,314	11,939	9,563	2,260	2,387	0	TBD	
4287	Contingency Theater Automated Planning System (CTAPS)	23,916	14,343	9,040	8,485	6,545	10,968	11,447	Continuing	TBD	
4288	Wing C2 System (WCCS)	3,327	6,009	3,938	3,750	3,746	0	0	0	31,778	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**

The Theater Battle Management Core Systems (TBMCS) develops force-level and wing-level command, control, and intelligence systems which utilize DoD's Global Command and Control System (GCCS) Defense Information Infrastructure (DII) common operating environment (COE). Acquisition of these systems will allow the execution of TBM planning, intelligence, and operational functions of the Joint Forces Air Component Commander (JFACC), including the air tasking order (ATO). Projects included in this program are Command & Control Information Processing System (C2IPS), Contingency Theater Automated Planning System (CTAPS), and Wing Command & Control System (WCCS). Another project, Combat Intelligence System (CIS) is migrating to the DII COE and will directly interface TBMCS, but RDT&E funds for CIS are programmed under PEs 0604321F, 0207431F, and 0305158F (FY97), and 0207414F (FY98+). The TBMCS effort is Post Milestone III effort, and is in Budget Activity 7, Operational Systems Development because it incrementally upgrades and develops capabilities for currently operational systems.

**(U) Acquisition Strategy:**

Electronic Systems Center (ESC), Hanscom AFB, MA will manage the overall TBMCS program (CTAPS, WCCS, CIS, and C2IPS). Lockheed-Martin Command and Control Systems (LMCCS) was competitively selected and is performing the TBMCS software integration and - when directed by the government - will develop individual applications consistent with the GCCS DII COE. C2IPS efforts will continue under the current prime contractor, Computer Sciences Corporation (CSC). C2IPS migration into the DII COE will begin in FY98.

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0207438F Theater Battle Management (TBM) C4I

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	32,766	24,013	35,341	TBD
(U) Appropriated Value	34,415	27,013		
(U) Adjustments to Appropriated Value				
a. Congressional Reductions	-827	-1,670		
b. Small Business Innovative Research	-822	-565		
c. Rescissions	-54			
(U) Adjustments to Budget Years Since FY 1998 PB		0	-8049	
(U) Current Budget Submit / FY 1999 President's Budget	32,712	24,778	27,292	TBD

## (U) Change Summary Explanation:

Funding: FY97: FY 97 changes as shown above.

FY98: No change.

FY99: Funds moved to FY 01 to support a more incremental development schedule for C2IPS.

Schedule: See Individual Projects.

Technical: See Individual Projects.

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement, AF (0207438F)	46,129	46,920	44,654	48,351	52,224	45,551	44,783	Cont	TBD
(U) Operations and Maintenance, AF (0207438F)	3,145	3,155	5,417	5,586	6,879	6,522	6,920	Cont	TBD
(U) Operations and Maintenance, AF (0207415F)	9,105	18,566	20,505	20,871	22,302	13,376	13,645	Cont	TBD
(U) O&M, PE 0207431, CAIS	4,864	1,968	2,778	3,752	4,797	4,913	5,039	Cont	TBD
(U) RDT&E, PE 0207431F, CAIS	7,373	0	0	0	0	0	0	0	7,373
(U) RDT&E, PE 0305158F, Projec 4394	1,945	0	0	0	0	0	0	Cont	1,945
(U) RDT&E, PE 0604321F, CIS-EMD	2,622	0	0	0	0	0	0	0	2,622
(U) Other Procurement, PE 0207414F	9,705	18,489	13,206	18,718	14,452	11,932	11,928	Cont	TBD
(U) Other Procurement, PE 0207431F	2,150	3,730	3,016	5,206	4,028	3,063	3,072	Cont	TBD
(U) Other Procurement, PE 0305158F	1,951	0	0	0	0	0	0	0	2,919

UNCLASSIFIED

DATE February 1998

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0207438F Theater Battle Management (TBM) C4I

(U) D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) WCCS 1.2 Release		X										
(U) CTAPS Version 5.2 Release												
(U) TBMCS S/W Version 1.0												
(U) Preliminary Design Review	X											
(U) In-Plant Test												
(U) Version 1.0 Release								X				
(U) TBMCS S/W Version 2.0												
(U) Preliminary Design Review												
(U) In-Plant Test (FY00)										X		
(U) Version 2.0 Release (FY00)												

UNCLASSIFIED



RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207438F Theater Battle Management (TBM) C4I								3330	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
3330	Cmd Cntrl Info Process Sys (C2IPS)	5,469	4,426	14,314	11,939	9,563	2,260	2,387	0	TBD	

(U) A. Mission Description and Budget Item Justification

The Command & Control Information Processing System (C2IPS) project develops communications and information processing hardware and software for all echelons of the Air Mobility Command (AMC). C2IPS provides AMC the capability to monitor in real-time the operational airlift and tanker functions associated with mission execution worldwide. The integration of C2IPS computer resources and software with improved High Frequency (HF) equipment and other available communications media will result in a unified AMC C2 System.

(U) Acquisition Strategy:

The C2IPS will be developed and installed in four increments. Increment 1 provided a digital data message handling capability at each Information Processing System (IPS) node and implements mission execution monitoring. Increment 2 builds on Increment 1 software to support mission planning and scheduling. Increment 3 will provide C2IPS with a client server architecture as part of the system migration efforts. Increment 4 completes the directed C2IPS efforts for the incremental development, and lays the foundation for the migration strategy that will merge features of C2IPS into TBMCS.

(U) FY 1997 (\$ in Thousands):

- (U) \$ 3,053	Completed Incremented 2.0D software development
- (U) \$ 325	Completed Increment 3.0 software development
- (U) \$ 500	Started 3.B, 3.C and Increment 4 software development.
- (U) \$ 1,336	Continued implementation of force- and unit-level migration strategies.
- (U) \$ 255	Completed Initial Operational Test & Evaluation (OT&E) force and unit level migration.
- (U) \$5,469	<b>Total</b>

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207438F Theater Battle Management (TBM) C4I

3330

## (U) FY 1998 (\$ in Thousands):

- (U) \$ 850 Continue increments 3A and 3B software development  
 - (U) \$ 2,514 Continue increment 3C(Data partitioning, Advanced Network Options and Y2K revisions)  
 - (U) \$ 1,062 Start increment 4 (Detailed Planning & Scheduling for integration of AMC Aircraft Schedules)  
 - (U) \$ 4,426 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 7,900 Complete C/S software and evaluation (3A/3B/3C)  
 - (U) \$ 5,414 Continue increment 4 (Detailed Planning & Scheduling for integration of AMC Aircraft Schedules)  
 - (U) \$ 1,000 Start requirements planning & segmentation for integration into DII COE  
 - (U) \$14,314 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998 PB)	5,469	4,764	22,102	
(U) Appropriated Value	5,779			
(U) Adjustments to Appropriated Value				
a. Congressional Reductions	-172	-237		
b. Small Business Innovative Research	-138	-101		
c. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-7,788	
(U) Current Budget Submit / FY 1999 President's Budget	5,469	4,426	14,314	TBD

## (U) Change Summary Explanation:

Funding: FY99 funds are transferred to FY01 to create a lower risk acquisition profile more appropriate to incremental development.

Schedule: Some functionality will be rephased between increments.

Technical: N/A

Project 3330

Page 5 of 17 Pages

Exhibit R-2 (PE 0207438F)

1367

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207438F Theater Battle Management (TBM) C4I	3330	
(U) C. Other Program Funding Summary (\$ in Thousands) - Not Applicable.			
(U) D. <u>Schedule Profile</u>			
(U) <u>Increment 2.0D</u>			
(U) DT&E			
(U) Operational Test & Evaluation (OT&E)			
(U) <u>Increment 3</u>			
(U) TRR			
(U) DT&E			
(U) <u>Increment 4</u>			
(U) SSR			
(U) PDR			
(U) TRR			
(U) DT&E			

Project 3330

Page 6 of 17 Pages

Exhibit R-2 (PE 0207438F)

1368

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207438F Theater Battle Management (TBM) C4I								4287	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4287	Contingency Theater Automated Planning System (CTAPS)	23,916	14,343	9,040	8,485	6,545	10,968	11,447	Continuing	TBD	
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>The Contingency Theater Automated Planning System (CTAPS) program directly supports the Joint Forces Air Component Commander (JFACC) in the planning and execution of the theater air campaign down to the unit level. The system is designed to an open system standard, promoting interoperability among USAF, Services, and Allied command and control systems. The air tasking order generation and dissemination capabilities of CTAPS are the standard for all DoD command and control systems. On-going efforts are migrating the current system to Global Command and Control System (GCCS) Defense Information Infrastructure (DII) common operating environment (COE), ensuring compatibility, interoperability, and commonality among services</p> <p>(U) <u>Acquisition Strategy:</u></p> <p>The program utilizes an evolutionary acquisition strategy that accommodates changes in user requirements and improvements in commercial technology through a series of planned incremental software releases.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$17,069 Complete version planning process, continue design/development of TBMCS version 1.0, and the full Ops/Intel interoperability.</li> <li>- (U) \$ 3,610 Continue Air Battle Planning and Architecture modifications to support the new Air Tasking Order (ATO) format.</li> <li>- (U) \$ 307 Initiate version planning and design for TBMCS Version 2.</li> <li>- (U) \$ 2,930 Systems engineering and support.</li> <li>- (U) \$23,916 Total</li> </ul> <p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$ 9,989 Complete TBMCS software version 1.0 development and initiate TBMCS software version 2.0 development.</li> <li>- (U) \$ 2,545 Complete development of new ATO format.</li> <li>- (U) \$ 809 Systems engineering and support.</li> <li>- (U) \$ 1,000 Integrate Combat Integration Capability (CIC) into TBMCS.</li> <li>- (U) \$14,343 Total</li> </ul>											

Project 4287

Page 8 of 17 Pages

Exhibit R-2 (PE 0207438F)

1370

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207438F Theater Battle Management (TBM) C4I

4287

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 5,357 Continue TBMCS software version 2.0 development.
- (U) \$ 1,765 Technical insertion activities.
- (U) \$ 918 Systems engineering and support.
- (U) \$ 1,000 Continue integration efforts of CIC into TBMCS.
- (U) \$9,040 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	23,970	12,886	9,222	TBD
(U) Appropriated Value		15,886		
(U) Adjustments to Appropriated Value		-1216		
a. Congressional Reductions		-327		
b. Small Business Innovative Research				
c. Rescissions	-54			
(U) Adjustments to Budget Years Since FY 1998 PB			-182	
(U) Current Budget Submit / FY 1999 President's Budget	23,916	14,343	9,040	TBD

## (U) Change Summary Explanation:

Funding: FY98: Includes \$3M plus-up . Adjustments as shown above.  
Schedule: Not Applicable.

Technical: FY 98/99: Add Combat Integration Capability (CIC) within TBMCS.

## (U) C. Other Program Funding Summary (\$ in Thousands) - Please see Program Summary above.

## (U) D. Schedule Profile - Please see Program Summary above.

Project 4287

Page 9 of 17 Pages

Exhibit R-2 (PE 0207438F)

1371

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
7 - Operational System Development		0207438F Theater Battle Management (TBM) C4I			4287	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>						
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>		
(U)	System Integration and Development	20,145	13,041	8,122		
(U)	System Engineering	1,291	450	346		
(U)	TEMS	1,823	852	572		
(U)	SPO Support	657	0	0		
(U)	Total	23,916	14,343	9,040		
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>						
Performing Organizations:						
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997
						Budget FY 1998
						Budget FY 1999
						Budget to Complete
						Total Program
<u>Product Development Organizations</u>						
LMCCS	C/CPAF/PR	Oct 95	TBD	TBD	1,169	16,328
SAIC (S/W INT)	C/CPFF/FCA	Mar 94	n/a	n/a	11,085	0
Hampton VA						
SAIC	C/CPFF/FCA	Feb 94	n/a	n/a	3,759	0
(ASOC/BSO)						
Hampton VA,						
Anchorage AK						
PARAMAX	C/CPFF/FCA	Mar 94	n/a	n/a	1,207	0
(APS) St Paul						
MN						
INEL (ASOC)	C/CPFF/FCA	Oct 94	n/a	n/a	1,243	0
Idaho Falls ID						
Logicon, Inc	C/CPFF/FCA	Jun 94	n/a	n/a	0	3,610
San Pedro, CA						2,545
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0

1372

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										4287	
PE NUMBER AND TITLE										0207438F Theater Battle Management (TBM) C4I	
Contractor or	Contract	Award or	Performing	Project	Total	Budget	Budget	Budget	Budget	Budget to	Total
Government	Method/Type	Obligation	Activity	Office	Prior to	FY 1997	FY 1998	FY 1999	Complete	Program	
Performing	Vehicle	Date	EAC	EAC	FY 1997	FY 1997	FY 1998	FY 1999	Complete	Program	
Activity	Various	Various	n/a	n/a	410	0	0	0	0	410	
Miscellaneous											
Support and Management Organizations											
MITRE	SS/CPAF	Oct 94	n/a	n/a	5,237	2,614	450	346	Cont.	TBD	
TEMS	CT&M	Various	n/a	n/a	1,430	400	400	400	Cont.	TBD	
Miscellaneous	Various	Various	n/a	n/a	2,137	841	452	354	0	2,978	
Test and Evaluation Organizations											
46 TS	Project Order	Various	n/a	n/a	0	46	75	75	Cont	TBD	
JTIC	MIPR	Various	n/a	n/a	0	77	0	0	0	77	
Government Furnished Property: Not Applicable											
Subtotal Product Development											
					18,873	19,938	12,966	7,865	Cont.	TBD	
Subtotal Support and Management					8,804	3,855	1,302	1,100	Cont.	TBD	
Subtotal Test and Evaluation					0	123	75	75	Cont.	TBD	
Total Project					27,677	23,916	14,343	9,040	Cont.	TBD	

Project 4287

Page 11 of 17 Pages

Exhibit R-3 (PE 0207438F)

1373

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0207438F Theater Battle Management (TBM) C4I

PROJECT

4288

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	3,327	6,009	3,938	3,750	3,746	0	0	0	31,778

(U) A. Mission Description and Budget Item Justification

This project includes development of mission critical application software for WCCS operating on commercially available hardware and system software. Wing commanders require an accurate, composite picture of their wing's total resources to effectively command, control, and manage their forces in support of their combat sortie generation and reporting responsibilities. Key functional areas (operations, maintenance, mission planning, intelligence, weather, etc.) use WCCS to support the wing commander in the mission execution and reporting process by exchanging critical command and control and intelligence information with functional counterparts located throughout the wing. The introduction of increasingly sophisticated weapon systems - with their need for and ability to produce large amounts of data - require an automated C2 system to bring meaningful, consolidated information to the Commander in near real-time. Today, this information is relayed over secure and unsecured telephones, radios, and other communications devices, as well as by runners to update multi-user status displays (grease boards) or hand written logs. These techniques have not changed substantially since World War II, and are cumbersome, error-prone, are subject to security compromise, and involve duplication of effort. Disparate programs have led to the proliferation of stovepipe systems which can not provide interoperability and do not adequately meet the needs of today's air operations. The WCCS program will design, develop, and install an automated, standard wing-level C2 system that will be tailored to meet unique organizational requirements, provide interoperability, and reduce training and maintenance costs.

Project 4288

Page 12 of 17 Pages

Exhibit R-2 (PE 0207438F)

1374

UNCLASSIFIED

## UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational System Development</b>	<b>0207438F Theater Battle Management (TBM) C4I</b>	<b>4288</b>	
(U) <u>Acquisition Strategy:</u>			
Electronic Systems Center (ESC), Hanscom AFB, MA will manage the overall TBMCS program (CTAPS, WCCS, CIS, and C2IPS). Lockheed-Martin Command and Control Systems (LMCCS) was competitively selected and is performing the TBMCS software integration and - when directed by the government - will develop individual applications consistent with the GCCS DII COE.			
(U) <u>FY 1997 (\$ in Thousands):</u>			
-	(U) \$ 2,797	Continue design and development of TBMCS software version 1.0.	
		- (U) Complete scheduler.	
		- (U) Phase II Decision Support System (DDS) Module.	
		- (U) Continue first phase of security enhancement implementation.	
		- (U) Include/modify unit/force level interfaces (Air Force Mission Support System (AFMSS), Automated Weather Distribution System (AWDS), Base Recovery Control System (BRCS), and Combat Ammunition System-Base (CAS-B).	
		- (U) P3I efforts.	
		- (U) Continue force/unit level migration.	
-	(U) \$ 105	Initiate TBMCS software version 2.0 version planning and design.	
-	(U) \$ 425	Systems engineering and support.	
-	(U) \$3,327	<b>Total</b>	
(U) <u>FY 1998 (\$ in Thousands):</u>			
-	(U) \$ 353	Initiate TBMCS software version 2.0 development.	
-	(U) \$5,390	Complete TBMCS software version 1.0 development.	
-	(U) \$ 266	Systems engineering and support.	
-	(U) \$6,009	<b>Total</b>	
(U) <u>FY 1999 (\$ in Thousands):</u>			
-	(U) \$2,547	Continue TBMCS software version 2.0 development.	
-	(U) \$1,150	Technical insertion activities.	
-	(U) \$ 241	Systems engineering and support.	
-	(U) \$3,938	<b>Total</b>	
Project 4288		Exhibit R-2 (PE 0207438F)	

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207438F Theater Battle Management (TBM) C4I	4288	
(U) B. <u>Program Change Summary (\$ in Thousands)</u>			
(U) Previous President's Budget (FY 1998 PB)		FY 1997	FY 1998
(U) Appropriated Value		3,327	6,363
(U) Adjustments to Appropriated Value		3,502	4,017
a. Congressional Reductions		-92	-217
b. Small Business Innovative Research		-83	-137
c. Rescissions			
(U) Adjustments to Budget Years Since FY 1998 PB			-79
(U) Current Budget Submit / FY 1999 Presidents Budget		3,327	3,938
(U) Change Summary Explanation:			TBD
Funding: No significant impact.			
Schedule: N/A			
Technical: FY 98: Add new ATO format capability.			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> - Please see Program Summary above.			
(U) D. <u>Schedule Profile</u> - Please see Program Summary above.			

Project 4288

Page 14 of 17 Pages

Exhibit R-2 (PE 0207438F)

1376

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PROJECT	
7 - Operational System Development		0207438F Theater Battle Management (TBM) C4I	
		4288	
		PE NUMBER AND TITLE	
		FY 1997	FY 1998
		FY 1999	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>			
(U) System Integration and Development		2,787	5,743
(U) Systems Engineering		176	66
(U) TEMS		249	200
(U) SPO Support		115	0
(U) Total		3,327	6,009
			3,697
			61
			180
			0
			3,938

Project 4288

Page 15 of 17 Pages

Exhibit R-3 (PE 0207438F)

1377

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207438F Theater Battle Management (TBM) C4I

4288

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
LMCCS	C/CPAF/PR	Oct 95	TBD	TBD	50	2,787	5,743	3,697	Cont.	TBD
SAIC	C/CPFF/FCA	Jan 94	n/a	n/a	5,000	0	0	0	0	5,000
<u>Support and Management Organizations</u>										
MITRE	SS/CPAF	Oct 94	n/a	n/a	750	176	66	61	Cont.	TBD
TEMS & Misc	Various	Various	n/a	n/a	904	364	200	180	Cont.	TBD

Test and Evaluation Organizations - Not Applicable

Project 4288

Page 16 of 17 Pages

Exhibit R-3 (PE 0207438F)

1378

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207438F Theater Battle Management (TBM) C4I

4288

## Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Property Local Purchase	Various	Various	Various	128	0	0	0	Cont.	TBD
Support and Management Property - Not Applicable									
Test and Evaluation Property - Not Applicable									
Subtotal Product Development				5,178	2,787	5,743	3,697	Cont.	TBD
Subtotal Support and Management				1,654	540	266	241	Cont.	TBD
Subtotal Test and Evaluation				0	0	0	0	Cont.	TBD
<b>Total Project</b>				<b>6,832</b>	<b>3,327</b>	<b>6,009</b>	<b>3,938</b>	<b>Cont.</b>	<b>TBD</b>

Project 4288

Page 17 of 17 Pages

Exhibit R-3 (PE 0207438F)

1379

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207581F  
PE TITLE: Joint STARS

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207581F Joint STARS								0003	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
0003 JSTARS		0*	118,335	123,793	87,673	125,453	141,051	112,334	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

\* Note: Joint STARS RDT&E funds for FY97 and prior were in PE 0604770F.

(U) A. Mission Description and Budget Item Justification

There is an Air Force and Army need to provide, from airborne platforms, near-real time surveillance and targeting information on moving and stationary ground targets (growth to maritime operations), slow moving rotary and fixed wing aircraft, and rotating antennas. This information enables operational and tactical commanders to make and execute battle decisions. To meet these needs, the Air Force and Army initiated the Joint Surveillance Target Attack Radar System (Joint STARS) program with the Air Force as lead service. Joint STARS provides target information for pairing direct attack aircraft and standoff weapons against selected targets. The system is capable of being cued by other reconnaissance, surveillance, and target acquisition systems; is able to respond rapidly to worldwide contingencies; and provides surveillance and attack information in all light and near-all-weather conditions. The operational utility of the system was effectively demonstrated by the outstanding performance of two developmental aircraft in support of combat operations during Desert Storm. Joint STARS aircraft were deployed in support of Operation Joint Endeavor in Dec 95 and again from Nov to Dec 96. In Sep 96 the Defense Acquisition Board (DAB) Milestone III Review approved full rate production of a 19 E-8C program. The 93<sup>rd</sup> Air Control Wing, Robins AFB, GA, declared Joint STARS Initial Operational Capability (IOC) in Dec 97 and the system is now participating in operational and training exercises. After the Quadrennial Defense Review recommended a revision of the Joint STARS production profile the Air Force reduced Joint STARS production from 19 to 13 E-8Cs. The acquisition strategy is to procure 2 E-8Cs per year, starting in FY93, and ending in FY99, with 1 E-8C produced in FY98. This program is in Budget Activity 7 - Operational System Development.

(U) FY 1997 (\$ in Thousands): (Funds contained in PE 0604770F)

(U) FY 1998 (\$ in Thousands):

-	(U)	4,960	Continue E-8C follow-on development and testing program
-	(U)	8,664	Continue Support Systems and Crew Trainer Development
-	(U)	24,350	Continue Self Defense Suite (SDS) and E-8C Follow-On Test Support (FOTS)
-	(U)	17,776	Continue Government Furnished Equipment (GFE), program support, test, and other miscellaneous efforts
-	(U)	59,585	Continue Life Cycle Cost Reduction Initiatives
-	(U)	3,000	Initiate Radar Technology Insertion Program (RTIP)
-	(U)	118,335	Total

Project 0003

Page 1 of 5 Pages

Exhibit R-2 (PE 0207581F)

1381

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0207581F Joint STARS

PROJECT

0003

(U) FY 1999 (\$ in Thousands):

(U) 6,397	Continue E-8C follow-on development and test program (Joint STARS Integrated Maintenance Information System (JIMIS) and Site Activation Task Force (SATAF) Tech Order Verification)			
(U) 6,271	Continue Support Systems and Crew Trainer Development			
(U) 21,079	Continue SDS and E-8C FOTS			
(U) 16,368	Continue GFE, program support, test, and other miscellaneous efforts			
(U) 33,498	Continue Life Cycle Cost Reduction Initiatives and DAMA-compliant SATCOM upgrade			
(U) 40,180	Continue RTIP development			
(U) 123,793	Total			

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998 PB)	0	119,189	84,458	
(U) Appropriated Value		126,189		
(U) Adjustments to Appropriated Value				
a. General Congressional Reductions		4,830		
b. Small Business Innovative Research		3,024		
c. Omnibus, Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Since FY 1998 PB			39,335	
(U) Current Budget Submit/FY 1999 President's Budget	0	118,335	123,793	TBD

(U) Change Summary Explanation

Funding: Joint STARS RDT&E funds for FY97 were in PE 0604770F. The appropriated value for FY98 includes an increase of \$3.0 million for Cruise Missile Defense upgrades and \$4.0 million for integration of the Improved Data Modem (IDM). The increase to the FY99 budgeted amount is for the Radar Technology Insertion program (RTIP). There is a pending reprogramming of \$805 thousand in FY98 RDT&E for higher priority requirements.

Schedule: The FY99 Budget request reduces the production quantity from 19 to 13 E-8Cs, with FY99 the final production year. No changes to RDT&E schedule. Technical: The RTIP effort will result in significant enhancements to the Joint STARS radar performance.

Project 0003

Page 2 of 5 Pages

Exhibit R-2 (PE 0207581F)

1382

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development  
0207581F Joint STARS

PROJECT

0003

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Aircraft Procurement (BP 10)	534,649	327,730	463,051	47,521	11,954	12,979	7,573	Cont.	TBD
(U) Modifications (BP 11)			44,179	30,073	16,091	17,197	24,202	Cont.	TBD
(U) Spares (BP 16)	0	72,209	68,192	87,885	81,557	38,889	35,305	Cont.	TBD

Note: Procurement began with 2 aircraft per year in FY93, FY94, FY95, and FY96.

(U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) Required Assets Availability (RAA)		*							
(U) Production Aircraft Deliveries	*				*				
(U) Full Rate Production Contract Award			*						
(U) Organic Support Capability					*				
(U) IOC									
(U) Mature Reliability									
(U) Follow-On OT&E Start						X			

\* Accomplished event

Project 0003

Page 3 of 5 Pages

Exhibit R-2 (PE 0207581F)

1383

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
7 - Operational System Development		0207581F Joint STARS			0003	
NOTE: Joint STARS RDT&E funds for FY 1997 and prior were in PE 0604770F.						
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>						
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>		
(U)	Product Development	0	87,199	89,179		
(U)	Support and Management		4,863	2,703		
(U)	Test and Evaluation		<u>26,273</u>	<u>31,911</u>		
(U)	Total	0	118,335	123,793		
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>						
Performing Organizations:						
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997
<u>Product Development Organizations</u>						
GMSD*	SS/CPIF	Nov 90	111,738	111,738	0	0
Other Misc. Studies	Various	Various	15,644	15,644	0	0
Flt. Crew Sim. Dual and Assoc.	SS/CPAF/FFP	May 94	4,811	4,811	0	0
MSIP Block 30 Upgrade	TBD	Various	48,421	48,421	0	0
Radar/IDM Improvements	TBD	TBD	299,780	299,780	0	0
Interop. Certif. Cap. GMSD	SS/CPIF	Dec 96	10,124	10,124	0	0
* Grumman Melbourne Systems Division (now Northrop Grumman)						
Project 0003						
Page 4 of 5 Pages						
Exhibit B-3 (PE 0207581F)						

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
7 - Operational System Development										0207581F Joint STARS		
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
<u>Support and Management Organizations</u>												
MITRE		Ongoing	N/A	N/A	0	0	218	227	236	681		
Other Support. & Management		Ongoing	N/A	N/A	0	0	4,645	2,476	9,247	16,368		
<u>Test and Evaluation Organizations</u>												
3246 Test Wing Eglin AFB	PO		N/A	N/A	0	0	1,170	2,890	8,510	12,570		
Range Support												
E-8C FOTS	SS/FFP/CPFF	Aug 96	139,121	139,121			17,941	21,079	100,101	139,121		
GMSD												
JTF Support	Allotment						7,162	7,942	33,883	56,149		
<u>Government Furnished Property</u>												
JTIDS		Ongoing					168	226	0	394		
<u>Support and Management Property</u>												
<u>Test and Evaluation Property</u>												
Subtotal Product Development					0	0	87,199	89,179	314,534	490,912		
Subtotal Support and Management					0	0	4,863	2,703	9,483	17,049		
Subtotal Test and Evaluation					0	0	26,273	31,911	142,494	200,678		
Total Project					0	0	118,335	123,793	466,511	708,639		

Project 0003

Page 5 of 5 Pages

Exhibit R-3 (PE 0207581F)

Project 0003

Page 5 of 5 Pages

Exhibit R-3 (PE 0207581F)

1385

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207590F  
PE TITLE: Seek Eagle

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0207590F Seek Eagle									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	13,550	16,909	17,590	22,285	20,019	18,318	17,542	Continuing	Continuing	
2784	Armament Standardization/Control/Munitions Material Handling Equipment	1,125	1,040	0*	0	0	0	0	0	3,317	
4037	SEEK EAGLE Certifications	12,425	15,869	17,590	22,285	20,019	18,318	17,542	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

\* Funding for Project 2784 for FY99 and beyond is transferred to PE 64602F, Armament/Ordnance Development

(U) A. Mission Description and Budget Item Justification

The Air Force has a variety of combat aircraft and numerous stores (munitions, missiles, fuel tanks, electronic countermeasures pods, etc.). Aircraft carry these stores in countless different loading combinations determined by operational scenarios, missions, and tactics. Loading configurations change as operational plans and tactics change, and as new aircraft and stores are developed and produced. Before operational use, the Air Force must certify these configurations for safe loading, carriage, and separation (jettison and normal release), and must verify ballistics accuracy under the user-certified carriage and employment parameters. The Air Force SEEK EAGLE program completes these certifications through any combination of ground and flight testing, wind tunnel testing, advanced testing software, and engineering analysis. Over 700 aircraft-store combinations exist to be certified, with new ones added on a regular basis. Depending upon the complexity, certification takes from months to years. The SEEK EAGLE program is also responsible for insertion of new and emerging technologies into the SEEK EAGLE process and providing resources for sustainment of a viable Air Force aircraft-store certification capability. Electronic Technical Orders (TO's) are developed through the Combat Weapons Delivery Software (CWDS), creating cost savings by eliminating paper technical orders. The Armament Standardization/Control/Munitions Material Handling Equipment (MMHE), Project 2784, satisfies several USAF and Tri-service requirements for standardization of armament and support equipment and eliminates unnecessary duplication of MMHE. Starting in FY99 and out, management responsibility for Project 2784 will transfer from Seek Eagle to the Armament/Ordnance Development program, PE 64602F. Seek Eagle funds are currently budgeted to support certification for new weapons programs including F-22, JSF, SFW, WCMD, JDAM, JASSM, JSOW, AIM-9X, AIM-120 C-5, and many other inventory stores on inventory aircraft. The RDT&E Budget Activity is 7. Operational Systems Development because the PE supports fielded systems.

(U) B. Acquisition Strategy

Please see "Acquisition Strategy" under each individual R-2 for details.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0207590F Seek Eagle

## 7 - Operational System Development

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	15,075	17,716	19,146	51,937
(U) Appropriated Value	15,469	17,716		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-370	-736		
b. SBIR	-24	-71*		
c. Omnibus or Other Above Threshold Reprogram	-1,500	**		
d. Below Threshold Reprogramming	-25			
e. Recissions				
(U) Adjustments to Budget Years Since FY1998 PB			-1,556	
(U) Current Budget Submit/FY1999 President's Budget	13,550	16,909	17,590	48,049

## (U) Change Summary Explanation:

Funding: \$1.5M of FY97 funds were used for Omnibus reprogramming. FY99 funds of \$1.202M were transferred to Armament/Ordnance Development (funding for Project 2784 for FY99 and beyond is transferred to PE 64602F, Armament/Ordnance Development).

\* An additional \$1K is pending reprogramming for additional SBIR reductions in FY98.

\*\* An additional \$20K in FY98 is pending reprogramming to fund higher Air Force priorities.

Schedule: N/A

Technical: N/A

## (U) C. Other Program Funding Summary (\$ in Thousands)

Appropriation:

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Missile Procurement	7,986	1,112	10,418	8,002	8,296	10,200	8,395	Cont.	Cont.
(U) Procurement of Ammunition, AF		4,012			1,824			Cont.	Cont.

Note: The procurement dollars shown above are budgeted in each weapons' procurement line. Please refer to the next page for a FYDP weapon certification schedule/roadmap.

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998				
BUDGET ACTIVITY		PE NUMBER AND TITLE					
<b>7 - Operational System Development</b>		<b>0207590F Seek Eagle</b>					
<b>(U) D. Schedule Profile</b>							
SEEK EAGLE program does not execute in accordance with established acquisition program milestones. Each aircraft-store configuration requested by the user goes through the SEEK EAGLE process by the designated user priority.							
The following chart maps the planned procurement years of Seek Eagle certification units for next generation weapons programs:							
	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03</b>
JSOW	X	X	X				
JDAM		X					
WCMD		X			X		
JASSM				X	X	X	
AIM-9X					X		X

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998																																													
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT																																														
7 - Operational System Development		0207590F Seek Eagle								2784																																														
	COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost																																														
2784	Armament Standardization/Control/Munitions Material Handling Equipment	1,125	1,040	0*	0	0	0	0	0	3,317																																														
Quantity of RDT&E Articles																																																								
<p>* Funding for Project 2784 for FY99 and beyond is transferred to PE 64602F, Armament/Ordnance Development</p> <p>(U) A. <u>Mission Description and Budget Item Justification</u>  <u>Armament Standardization/Control/Munitions Material Handling Equipment (MMHE)</u>: This continuing project develops and improves the standardization and commonality of improved munitions handling and armament equipment to preclude duplication and proliferation. This project's efforts are limited to the study, design and development of MMHE and armament control systems.</p> <p>(U) B. <u>Acquisition Strategy</u>  Funds are executed organically in support of munitions material handling equipment improvement studies, analyses, and tests.</p> <p>(U) FY 1997 (\$ in Thousands):</p> <table> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>970</td> <td>Designed, prototyped, and tested various MMHE projects, i.e., complete testing of B-52H Yoke Fixture, JSOW Loading Pan, Rocket Module, UDL Discharge Chute, B-2/B-52 Rotary Launcher Loading Adapter, Fuze Torque Adapter, Ammo Drum Handling Bar, GCU-30 Adapter Tool, MHU-114 Stacking Fixture and Mechanical Ram Assembly; initiate design GBU Wing Container, MHU-83 Remote Control Upgrade, and AUR Container Handling Device; initiate evaluation of metal RAMS containers</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>105</td> <td>Continued design and manufacture of the Next Generation Munitions Handler Demonstrator and Aluminum Rail Set</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>50</td> <td>Continued prototype and testing of B-1B Rotary Launcher Adapter and Aluminum Rail Set</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>1,125</td> <td>Total</td> </tr> </table> <p>(U) FY 1998 (\$ in Thousands):</p> <table> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>610</td> <td>Design, prototype, and test various MMHE projects, i.e., prototype and test GBU Wing Container and ISO Container Handling Device; initiate design of AME Maintenance Stand, T-2 Pallet Lock Device, and Flare Assembly Fixture; complete evaluation of RAMS Containers and testing of B-1B Rotary Launcher Adapter and MHU-83 Remote Control Upgrade</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>230</td> <td>Complete design/manufacture of Next Generation Munitions Handler Demonstrator, MHU-110 Trailer Upgrade, and Aluminum Rail Set</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>100</td> <td>Initiate design of Next Generation Munitions Trailer and B-52 ALCM Pylon Loading Adapter</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>100</td> <td>Initiate ISO Container Munitions Packaging and Bottom Lift Forklift Projects</td> </tr> <tr> <td>-</td> <td>(U)</td> <td>\$</td> <td>1,040</td> <td>Total</td> </tr> </table>												-	(U)	\$	970	Designed, prototyped, and tested various MMHE projects, i.e., complete testing of B-52H Yoke Fixture, JSOW Loading Pan, Rocket Module, UDL Discharge Chute, B-2/B-52 Rotary Launcher Loading Adapter, Fuze Torque Adapter, Ammo Drum Handling Bar, GCU-30 Adapter Tool, MHU-114 Stacking Fixture and Mechanical Ram Assembly; initiate design GBU Wing Container, MHU-83 Remote Control Upgrade, and AUR Container Handling Device; initiate evaluation of metal RAMS containers	-	(U)	\$	105	Continued design and manufacture of the Next Generation Munitions Handler Demonstrator and Aluminum Rail Set	-	(U)	\$	50	Continued prototype and testing of B-1B Rotary Launcher Adapter and Aluminum Rail Set	-	(U)	\$	1,125	Total	-	(U)	\$	610	Design, prototype, and test various MMHE projects, i.e., prototype and test GBU Wing Container and ISO Container Handling Device; initiate design of AME Maintenance Stand, T-2 Pallet Lock Device, and Flare Assembly Fixture; complete evaluation of RAMS Containers and testing of B-1B Rotary Launcher Adapter and MHU-83 Remote Control Upgrade	-	(U)	\$	230	Complete design/manufacture of Next Generation Munitions Handler Demonstrator, MHU-110 Trailer Upgrade, and Aluminum Rail Set	-	(U)	\$	100	Initiate design of Next Generation Munitions Trailer and B-52 ALCM Pylon Loading Adapter	-	(U)	\$	100	Initiate ISO Container Munitions Packaging and Bottom Lift Forklift Projects	-	(U)	\$	1,040	Total
-	(U)	\$	970	Designed, prototyped, and tested various MMHE projects, i.e., complete testing of B-52H Yoke Fixture, JSOW Loading Pan, Rocket Module, UDL Discharge Chute, B-2/B-52 Rotary Launcher Loading Adapter, Fuze Torque Adapter, Ammo Drum Handling Bar, GCU-30 Adapter Tool, MHU-114 Stacking Fixture and Mechanical Ram Assembly; initiate design GBU Wing Container, MHU-83 Remote Control Upgrade, and AUR Container Handling Device; initiate evaluation of metal RAMS containers																																																				
-	(U)	\$	105	Continued design and manufacture of the Next Generation Munitions Handler Demonstrator and Aluminum Rail Set																																																				
-	(U)	\$	50	Continued prototype and testing of B-1B Rotary Launcher Adapter and Aluminum Rail Set																																																				
-	(U)	\$	1,125	Total																																																				
-	(U)	\$	610	Design, prototype, and test various MMHE projects, i.e., prototype and test GBU Wing Container and ISO Container Handling Device; initiate design of AME Maintenance Stand, T-2 Pallet Lock Device, and Flare Assembly Fixture; complete evaluation of RAMS Containers and testing of B-1B Rotary Launcher Adapter and MHU-83 Remote Control Upgrade																																																				
-	(U)	\$	230	Complete design/manufacture of Next Generation Munitions Handler Demonstrator, MHU-110 Trailer Upgrade, and Aluminum Rail Set																																																				
-	(U)	\$	100	Initiate design of Next Generation Munitions Trailer and B-52 ALCM Pylon Loading Adapter																																																				
-	(U)	\$	100	Initiate ISO Container Munitions Packaging and Bottom Lift Forklift Projects																																																				
-	(U)	\$	1,040	Total																																																				

Project 2784

Page 4 of 13 Pages

1390

Exhibit R-2 (PE 0207590F)

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0207590F Seek Eagle

2784

(U) FY 1999 (\$ in Thousands):

-	(U)	\$	0	Total
---	-----	----	---	-------

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	1,125	1,150	1,202	3,477
(U) Appropriated Value	1,181	1,150		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-32	-106		
b. SBIR	-24	-4		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming		**		
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-1,202*	
(U) Current Budget Submit/FY1999 President's Budget	1,125	1,040	0*	2,165

(U) B. Program Change Summary (\$ in Thousands) (Continued)

(U) Change Summary Explanation:

Funding: Funding for Project 2784 for FY99 and out is transferred to PE 64602F, Armament/Ordnance Development.

\*\* An additional \$1K in FY98 is pending reprogramming to fund higher Air Force priorities.

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands): Not Applicable(U) D. Schedule Profile: Not Applicable

Project 2784

Page 5 of 13 Pages

Exhibit R-2 (PE 0207590F)

1391

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
2784

## 7 - Operational System Development

0207590F Seek Eagle

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Various MMHE Projects	970	610	0
(U) Next Generation Munitions Handler	75	160	0
(U) MHU-110 Trailer Upgrade	0	50	0
(U) B-1B Rotary Launcher Adapter	50	0	0
(U) Aluminum Rail Set	30	20	0
(U) Next Generation Munitions Trailer	0	75	0
(U) ISO Container Handling	0	100	0
(U) ALCM Pylon Adapter	0	25	0
(U) Total	1,125	1,040	0*

\* Funding for Project 2784 for FY99 and out is transferred to PE 64602F, Armament/Ordnance Development

Project 2784

Page 6 of 13 Pages

Exhibit R-3 (PE 0207590F)

1392

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY											
7 - Operational System Development										PE NUMBER AND TITLE	2784
										0207590F Seek Eagle	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
Performing Organizations:											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program*	
Product Development Organizations											
Dept of Energy/ NASA	T&M	Oct 96	N/A	N/A	500	75	160	0	0	735	
Support and Management Organizations											
TEAS/TAMS	CP	Oct 97	N/A	N/A	377	506	535	0	0	1,418	
AFDTC/FM	CP	Oct 97	N/A	N/A	130	160	120	0	0	410	
646 SUPS/LGS	CP	Cont.	N/A	N/A	13	189	50	0	0	252	
WL/MN	CP	Cont.	N/A	N/A	112	0	40	0	0	152	
Test and Evaluation Organizations											
46th Test Wing			N/A	N/A	20	195	135	0	0	350	
Government Furnished Property: Not Applicable											
Subtotal Product Development					500	75	160	0	0	735	
Subtotal Support and Management					632	855	745	0	0	2,232	
Subtotal Test and Evaluation					20	195	135	0	0	350	
Total Project					1,152	1,125	1,040	0*	0	3,317	
* Funding for Project 2784 for FY99 and out is transferred to PE 64602F, Armament/Ordnance Development											
Project 2784										Exhibit R-3 (PE 0207590F)	

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT
7 - Operational System Development		0207590F Seek Eagle							February 1998	4037
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4037	SEEK EAGLE Certifications	12,425	15,869	17,590	22,285	20,019	18,318	17,542	Continuing	Continuing
	Quantity of RDT&E Articles									

(U) A. Mission Description and Budget Item Justification

Air Force aircraft carry a variety of combat stores (munitions, missiles, fuel tanks, electronic countermeasures, pods, etc.) in countless different loading combinations determined by operational scenarios, missions, and tactics. Loading configurations change based on operational plans and tactics, and as new aircraft and stores are developed. Before operational use, the Air Force must certify these configurations for safe loading, carriage, and separation (jettison and normal release), and must verify ballistics accuracy under the user-specified carriage and employment parameters. The SEEK EAGLE program completes these certifications through any combination of ground and flight testing, wind tunnel testing, and engineering analysis. More than 700 aircraft-store configurations exist to be certified, with new ones added on a regular basis. Certification may take months to years to complete because of the diversity and interaction among systems being tested. The SEEK EAGLE program is also responsible for insertion of new and emerging technologies into the SEEK EAGLE process and providing resources to sustain a viable Air Force aircraft/store certification capability. Seek Eagle funds are currently budgeted to support certification for the following next generation weapons programs: SFW, WCMD, JDAM, JASSM, JSOW, AIM-9X, and AIM-120 C-5. Electronic Technical Orders (TO's) are developed through the Combat Weapons Delivery Software (CWDS).

(U) B. Acquisition Strategy

Procurement funds are planned and budgeted for by the Seek Eagle office, however, budget authorization is given directly to the weapon system program office. These program offices then plan the acquisition and contracting strategy.

(U) FY 1997 (\$ in Thousands):

-	(U) \$ 230	Initiated/designed/developed F-22 data and engineering models to use for follow-on weapons certifications
-	(U) \$ 1,682	Continued/completed aircraft load/separation prediction capability using Applied Computational Fluid Dynamics (ACFD)
-	(U) \$ 8,713	Initiated/continued/completed aircraft-store certifications on fighter and bomber aircraft
-	(U) \$ 1,800	Initiated/continued/developed/completed various automated Technical Orders/mission planning tools using CWDS
-	(U) \$ 12,425	Total

Project 4037

Page 8 of 13 Pages

Exhibit R-2 (PE 0207590F)

1394

UNCLASSIFIED

## UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>	PROJECT <b>4037</b>
BUDGET ACTIVITY <b>7 - Operational System Development</b>		PE NUMBER AND TITLE <b>0207590F Seek Eagle</b>	
<p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <p>- (U) \$ 1,750 Initiate/continue/develop F-22 data and engineering models to use for follow-on weapons certification</p> <p>- (U) \$ 2,100 Continue/complete aircraft load/separation prediction capability using Applied Computational Fluid Dynamics (ACFD)</p> <p>- (U) \$ 2,170 Initiate/continue/develop/complete various automated Technical Orders/mission planning tools using CWDS</p> <p>- (U) \$ 9,849 Initiate/continue/complete aircraft-store certification on fighter and bomber aircraft</p> <p>- (U) \$ 15,869 Total</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <p>- (U) \$ 3,268 Initiate/continue/develop F-22 data and engineering models to use for follow-on weapons certification</p> <p>- (U) \$ 2,300 Initiate/continue/develop/complete various automated Technical Orders/mission planning tools using CWDS</p> <p>- (U) \$ 2,400 Continue/complete aircraft load/separation prediction capability using Applied Computational Fluid Dynamics (ACFD)</p> <p>- (U) \$ 9,622 Initiate/continue/complete aircraft-store certification on fighter and bomber aircraft</p> <p>- (U) \$ 17,590 Total</p>			

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY		PROJECT		
7 - Operational System Development		4037		
(U) B. Program Change Summary (\$ in Thousands)		0207590F Seek Eagle		
	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	13,950	16,566	17,944	48,460
(U) Appropriated Value	14,288	16,566		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-338	-630		
b. SBIR		-67*		
c. Omnibus or Other Above Threshold Reprogram	-1500	**		
d. Below Threshold Reprogramming				
e. Rescissions	-25			
(U) Adjustments to Budget Years Since FY 1998 PB			-354	
(U) Current Budget Submit/FY1999 President's Budget	12,425	15,869	17,590	45,884
(U) Change Summary Explanation:				
Funding: FY97 reductions were for Congressional General Reductions, SBIR, and support for contingency operations. FY98 reductions were for Congressional General Reductions and SBIR.				
* An additional \$1 K is pending reprogramming for additional SBIR reductions in FY98.				
** An additional \$19K in FY98 is pending reprogramming to fund higher Air Force priorities.				
Schedule: N/A				
Technical: N/A				

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207590F Seek Eagle								4037	
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>											
Appropriation:											
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	
(U)	Missile Procurement	7,986	1,112	10,418	8,002	8,296	10,200	8,395	Cont.	Cont.	
	Procurement of Ammunition		4,012			1,824			Cont.	Cont.	
Note: The procurement dollars shown above are budgeted in each weapons' procurement line.											
(U) D. <u>Schedule Profile</u>											
The SEEK EAGLE program does not execute in accordance with established acquisition program milestones. Each aircraft-store configuration requested by the user goes through SEEK EAGLE process by the designated user priority.											



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development	0207590F Seek Eagle		4037	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) Process Sustainment	1,657	2,100	2,400	
(U) F-22 Data & Engineering Models	230	1,750	3,268	
(U) Engineering Analysis	2,872	3,050	3,200	
(U) Flight Testing	3,266	4,449	4,122	
(U) Wind Tunnel Testing	1,450	1,300	1,200	
(U) Other	1,800	2,170	2,300	
- Ballistic/ Safe Escape Analysis				
- Tech Order/P.C. Floppy Disk				
- Loading Process Development/Verification				
(U) Mission Support	1,150	1,050	1,100	
(U) Total	12,425	15,869	17,590	

Project 4037

Page 12 of 13 Pages

Exhibit R-3 (PE 0207590F)

1398

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207590F Seek Eagle

4037

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u> N/A										
<u>Support and Management Organizations</u>										
Mission Support	PO/REO	Continuous	N/A	N/A	7,167	1,150	1,050	1,100	Continuing	Cont.
<u>Test and Evaluation Organizations</u>										
46th Test Wing	PO/REO	Continuous	N/A	N/A	66,083	7,829	9,719	10,490	Continuing	Cont.
AEDC	PO/REO	Continuous	N/A	N/A	10,633	1,450	1,300	1,200	Continuing	Cont.
Various	PO/REO	Continuous	N/A	N/A	31,395	1,996	3,800	4,800	Continuing	Cont.

## Government Furnished Property: Not Applicable

Subtotal Product Development	N/A									
Subtotal Support and Management	7,167					1,150	1,050	1,100	Continuing	Cont.
Subtotal Test and Evaluation	108,111					11,275	14,819	16,490	Continuing	Cont.
<b>Total Project</b>	115,278					12,425	15,869	17,590	Continuing	Cont.

Project 4037

Page 13 of 13 Pages

Exhibit R-3 (PE 0207590F)

1399

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207601F

UNCLASSIFIED

PE TITLE: USAF Modeling and Simulation

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0207601F USAF Modeling and Simulation									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
	Total Program Element (PE) Cost	25,505	19,807	14,899	17,621	16,099	15,365	11,583	TBD	Continuing	
1008	National Air and Space Warfare Model (NASM)	16,657	14,667	13,123	13,853	12,245	11,507	7,626	TBD	Continuing	
1011	Joint Modeling & Simulation Integration Program (JMSIP)*	1,995	0	0	0	0	0	0	TBD	Continuing	
2888	Theater Air Command & Control Sim Facility (TACCSF)*	0	5,140	0	0	0	0	0	TBD	Continuing	
4566	Executive Agent for Air/Space Natural Environment*	0	0	0	0	0	0	0	TBD	Continuing	
4567	Joint Modeling and Simulation System (JMASS)	0	0	1,776	3,768	3,854	3,858	3,957	TBD	Continuing	
4582	ASC Simulation and Analysis Facility (SIMAF)	6,853	0	0	0	0	0	0	6,853	6,853	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
*Projects 1011 and 4566 were transferred to PE030861F beginning in FY 1999. Project 2888 was transferred to PE0207605F beginning in FY 1999. Reported in Justification Sheet for consistency.											
(U) A. <u>Mission Description and Budget Item Justification</u> Initiated in FY 94, this program is in budget activity 7 - Operational System Development, Research Category because it provides RDT&E funding for major USAF Modeling and Simulation efforts such as the National Air and Space Model (NASM)—the air and space element to the Joint Simulation System (JSIMS); the Joint Modeling and Simulation System (JMASS); and manpower authorizations for JSIMS. JSIMS will be the sole readiness training simulation used by all CINCs, Services, NAFs and at all simulation centers to train Joint Force Commanders, Joint Task Force staffs, Components and their staffs, including Joint Force Air Component Commanders and Air Operations Center personnel. JMASS provides HLA-compliant architecture for engagement level simulations.											
(U) <u>Acquisition Strategy</u>											

Exhibit R-2 (PE 0207601F)

Page 1 of 17 Pages

\*Projects 1011 and 4566 were transferred to PE030861F beginning in FY 1999. Project 2888 was transferred to PE0207605F beginning in FY 1999. Reported in Justification Sheet for consistency.

(U) **A. Mission Description and Budget Item Justification**

Initiated in FY 94, this program is in budget activity 7 - Operational System Development, Research Category because it provides RDT&E funding for major USAF Modeling and Simulation efforts such as the National Air and Space Model (NASM)—the air and space element to the Joint Simulation System (JSIMS); the Joint Modeling and Simulation System (JMASS); and manpower authorizations for JSIMS. JSIMS will be the sole readiness training simulation used by all CINCs, Services, NAFs and at all simulation centers to train Joint Force Commanders, Joint Task Force staffs, Components and their staffs, including Joint Force Air Component Commanders and Air Operations Center personnel. JMASS provides HLA-compliant architecture for engagement level simulations.

(U) **Acquisition Strategy**

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)				DATE	February 1998				
BUDGET ACTIVITY		PE NUMBER AND TITLE							
7 - Operational System Development		0207601F USAF Modeling and Simulation							
(U) B. Program Change Summary (\$ in Thousands)									
	FY 1997	FY 1998	FY 1999	Total Cost Continuing					
(U) FY1998 President's Budget	25,107	21,718	24,919						
(U) Appropriated Value	26,361	21,718							
(U) Adjustments to Appropriated Value									
a. Cong Reductions	-631	-1,410							
b. SBIR	-623	-501							
c. Omnibus or Other Above Threshold Reprogram									
d. Below Threshold Reprogramming	+440								
e. Recissions	-42								
(U) Adjustments to Budget Years Since FY 1998 PB		+46	-10,020						
(U) Current Budget Submit/1999 President's Budget	25,505	19,807	14,899		Continuing				
(U) Change Summary Explanation:									
Funding: FY97 - Below threshold reprogramming to supported increasing program activities.									
FY98 - \$46K is pending reprogramming to fund higher priorities.									
FY99 - Realignment to higher program priority									
Schedule: See individual R-2s attached									
Technical: See individual R-2s attached									
(U) C. Other Program Funding Summary (\$ in Thousands)									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Contin	Total Cost Contin
(U) O&M (AF 3400), PE27601F	42,824	29,119	360	534	536	630	607		
(U) Other Procurement (AF 834010 ADPE)	663	548							
(U) D. Schedule Profile See individual R-2s									

Exhibit R-2 (PE 0207601F)

Page 2 of 17 Pages

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207601F USAF Modeling and Simulation

1008

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
1008 National Air and Space Warfare Model (NASM)	16,657	14,667	13,123	13,853	12,245	11,507	7,626	TBD	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification

This program provides funds for Air Force and Joint wargaming architecture and model development, primarily in support of battlestaff training, education, and military operations. A new wargaming model, NASM, is being developed to replace the existing Air Force standard Air Warfare Simulation (AWSIM). NASM will expand the use and role of modeling and simulation (M&S) in support of operational and acquisition decision making, and increase the interoperability between Air Force and joint efforts. NASM includes an overall USAF M&S architecture and provides a reusable, portable, scalable, robust distributed core for other simulations. It includes an air combat resolution model to meet the needs of USAF MAJCOMs and Unified/Specified Command air components to train Air Component Commanders and their battle staffs. Primary users will be the unified command air components, Command in Chief's (CINCs), Joint Forces Air Component Commander's (JFACC), and Service components, as supported by BLUE FLAG and WPC for use in joint exercises involving air, ground, and sea campaigns. NASM is the air component portion of the evolving DoD, Joint Staff and Services Joint Simulation System (JSIMS) initiative.

(U) Acquisition Strategy(U) FY 1997 (\$ in Thousands):

- (U) \$ 7,549 Continue development of specific air objects to support JSIMS architecture  
 - (U) \$ 3,761 Continue NASM integration effort and operate the program management office  
 - (U) \$ 5,197 Implement, test, field and support configuration control board (CCB) approved Re-Engineered AWSIM  
 - (U) \$ 150 Expansion of functionality within Air Force Suite of Models (AFSOM)  
 - (U) \$ 16,657 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$ 9,400 Continue development of specific air objects to support JSIMS architecture  
 - (U) \$ 3,767 Continue NASM integration effort and operate the program management office  
 - (U) \$ 1,500 Implement, test, field and support configuration control board (CCB) approved Re-Engineered AWSIM  
 - (U) \$ 14,667 Total

Project 1008

Page 3 of 17 Pages

Exhibit R-2 (PE 0207601F)

1403

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
7 - Operational System Development	0207601F USAF Modeling and Simulation	February 1998	1008
(U) FY 1999 (\$ in Thousands):			
- (U) \$ 9,194	Continue development of specific air objects to support JSIMS architecture		
- (U) \$ 2,801	Continue NASM integration effort and operate the program management office		
- (U) \$ 1,128	Support and configuration manage the Re-engineered AWSIM		
- (U) \$ 13,123	Total		
(U) B. Program Change Summary (\$ in Thousands)			
(U) 1998 President's Budget		FY 1997	FY 1998
(U) Appropriated Value		16,259	16,270
(U) Adjustments to Appropriated Value		17,323	16,270
a. Cong Reductions		-441	-1,232
b. SBIR		-623	-371
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming			
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 99 President's Budget		16,657	14,667
(U) Change Summary Explanation:			
Funding: FY97 - Adjustment supports increasing program activities.			
FY98 - \$34K is pending reprogramming to fund higher priorities.			
FY99 - Adjustments to fund higher priorities.			
Schedule: No changes			
Technical: None			
(U) C. Other Program Funding Summary (\$ in Thousands)	None		
		FY 1999	Total Cost
		18,360	Continuing
		-5,237	
		13,123	Continuing

Project 1008

Page 4 of 17 Pages

Exhibit R-2 (PE 0207601F)

1404

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207601F USAF Modeling and Simulation	1008	
(U) D. <u>Schedule Profile</u>			
		FY 1997	FY 1998
		1 2 3 4	1 2 3 4
(U) AWSIM Re-engineering			
(U) NASM Prototypes			
(U) NASM Integration			
(U) Initial Op Capability (IOC) 4QFY99			
(U) Full Op Capability (FOC) 4QFY03			
<p>Note: NASM development schedule coincides with the Joint Simulation System (JSIMS) schedule of Initial Operational Capability (IOC) in FY99 and Full Operational Capability (FOC) in FY03.</p>			
Project 1008		Exhibit R-2 (PE 0207601F)	



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
7 - Operational System Development		0207601F USAF Modeling and Simulation			1008
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
National Air & Space Warfare Model (NASM)		FY 1997	FY 1998	FY 1999	
(U) Cost Categories:					
(U) a. Software development		12,265	10,619	8,846	
(U) b. Contractor support		3,477	3,729	3,946	
(U) c. Program Management support		710	163	171	
(U) d. Travel		205	156	160	
(U) Total		16,657	14,667	13,123	
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
Performing Organizations:					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
				Budget FY 1997	Budget FY 1998
				Budget FY 1999	Budget to Complete
					Total Program
<u>Product Development Organizations</u>					
Raytheon (NASM)	TRN	3 Mar 97	52,793	52,793	0
Raytheon (AWSIM/R)	TRN	7 Apr 94	9,565	9,565	5,616
Hughes (AWSIM/R)	TRN	2 Jun 94	5,351	5,351	2,570
<u>Support and Management Organizations</u>					
Tech Eng Mgt Spt (TEMS)	Del Order	1 Feb 94	20,843	20,843	4,394
MITRE	Contract Mod	11 Aug 94	15,185	15,185	2,144
Other	Various	Various	20,070	20,070	16,786
Project 1008					

Page 6 of 17 Pages

Exhibit R-3 (PE 0207601F)

Page 6 of 17 Pages

Exhibit R-3 (PE 0207601F)

1406

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT: 1008
BUDGET ACTIVITY		PE NUMBER AND TITLE										
7 - Operational System Development		0207601F USAF Modeling and Simulation										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
<u>Test and Evaluation Organizations</u>												
None												
Total Project			123,835	123,835	31,510	16,657	14,667	13,123	46,734	123,835		
<u>Government Furnished Property:</u>												
<u>Contract</u>												
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date		Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
<u>Product Development Property</u>												
None												
<u>Support and Management Property</u>												
None												
<u>Test and Evaluation Property</u>												
None												
Subtotal Product Development					8,186	11,712	10,619	8,844	28,348			
Subtotal Support and Management					23,324	4,900	4,048	4,276	19,505			
Subtotal Test and Evaluation												
Total Project					31,510	16,657	14,667	13,123	46,743			
Project 1008												
Page 7 of 17 Pages												
Exhibit R-3 (PE 0207601F)												

1407

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0207601F USAF Modeling and Simulation								4567	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4567	Joint Modeling and Simulation System (JMASS)	0	0	1,776	3,768	3,854	3,858	3,957	TBD	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**  
 The Joint Modeling & Simulation System (JMASS) is a simulation support environment for the development, configuration, execution, and analysis of high fidelity, repeatable simulations with re-usable models—focus is tactical/engagement level simulations with the present concentration on electronic combat. JMASS is a full system software implementation of a modern object based simulation architecture. JMASS provides users with the tools to: Develop objects, assemble these objects into models, configure the models in a complete simulation, execute the simulation, and post process the simulation data. JMASS tools assist users in developing fully compliant objects; users concentrate on the models and analysis, not computer science.

(U) **Acquisition Strategy**

(U) FY 1997 (\$ in Thousands):  
 - (U) \$0 Not Applicable

(U) FY 1998 (\$ in Thousands):  
 - (U) \$0 Not Applicable

(U) FY 1999 (\$ in Thousands):  
 - (U) \$ 491 High Level Architecture (HLA) Compliance  
 - (U) \$ 245 Improved User Interface  
 - (U) \$ 735 Develop Request For Proposal (RFP) documentation and operate the program management office  
 - (U) \$ 305 Prototype of JMASS software on a Personal Computer (PC)  
 - (U) \$ 1,776 Total

Project 4567

Page 8 of 17 Pages

Exhibit R-2 (PE 0207601F)

1408

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0207601F USAF Modeling and Simulation

PROJECT

4567

## 7 - Operational System Development

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) FY 1998 President's Budget	0	0	0	
(U) Appropriated Value				
(U) Adjustments to Appropriated Value				
a. Cong Reductions				
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Years Since FY 1998 PB			+1,776	
(U) Current Budget Submit/FY 1999 President's Budget	0	0	1,776	Continuing

## (U) Change Summary Explanation:

Funding: FY 99 adjustment of \$1,776K to support JMASS architecture.

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Continue	Total Cost
(U) PE64256F, Threat Simulator Development	6,685	4,090	4,100	2,100	2,100	2,100	2,100	Continue	25,899
Project 3321 (BW Test Resources)									
(U) PE 27601F, O&M (AF 3400)			490	582	579	686	664	Continue	3,002

Project 4567

Page 9 of 17 Pages

Exhibit R-2 (PE 0207601F)

1409

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0207601F USAF Modeling and Simulation		4567	
(U) D. Schedule Profile					
		FY 1997		FY 1998	FY 1999
		2	3	2	3
		X			
1			4	1	4
			X		X
(U) JMASS Releases				4	X
(U) Threat and Digital System Model					
(DSM) Releases					
(U) SA-2				X	
(U) SA-3					
(U) SA-5				X	
(U) SA-6				X	
(U) SA-8				X	
(U) SA-10				X	

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207601F USAF Modeling and Simulation

4567

### (U) A. Project Cost Breakdown (\$ in Thousands)

Joint Modeling and Simulation System (JMASS)

FY 1997

FY 1998

FY 1999

(U) Cost Categories

(U) a. Software Development

1,026

(U) b. Contractor Support

250

(U) c. Program Management Support

400

(U) d. Travel

100

(U) Total

1,776

### (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

#### Performing Organizations:

Contractor or

Government

Method/Type

Award or

Performing

Project

Total

Prior to

Budget

FY 1997

FY 1998

FY 1999

Budget to

Complete

Total

Program

Product Development Organizations

Various

0

0

0

1,776

continuing

continuing

continuing

Support and Management Organizations

None

Test and Evaluation Organizations

None

Project 4567

Page 11 of 17 Pages

Exhibit R-3 (PE 0207601F)

1411

UNCLASSIFIED

RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

February 1998

PE NUMBER AND TITLE

0207601F USAF Modeling and Simulation

PROJECT  
4567

**Government Furnished Property:**

Method/Type Award or

Total  
Prior to  
FY 1997

Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------	-------------------	-----------------------	------------------

### Product Development Property

None

## Support and Management Property

None

### Test and Evaluation Property

None

Subtotal Product Development

Subtotal Support and Management

### Subtotal Test and Evaluation

**Total Project**

0 0 0 1,776 continuing

0	0	0	1,776 continuing
---	---	---	------------------

Page 12 of 17 Pages

Exhibit R-3 (PE 0207601F)

1412

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207601F USAF Modeling and Simulation

4582

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4582 ASC Simulation and Analysis Facility (SIMAF)	6,853	0	0	0	0	0	0	6,853	6,853
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification

Aeronautical Systems Center 's (ASC) Simulation and Analysis Facility (SIMAF), is an initiative that supports the CSAF's realization of a Joint Synthetic Battlespace in the AF's "New Vector for Modeling, Simulation & Analysis (MS&A)". The SIMAF is an addition at Wright-Patterson AFB, OH to integrate existing and emerging MS&A capabilities. SIMAF will interconnect ASC's MS&A capabilities and demonstration capabilities for AFMC product and technologies; link AFMC product Centers, AF Battle Labs, T&E infrastructure, and Industry; and jump start the AF involvement in the USD (A&T) simulation based acquisition (SBA) initiative.

(U) Acquisition Strategy

(U) FY 1997 (\$ in Thousands):

- (U) \$ 5,053 Development of hardware and software for constructive, virtual environment  
 - (U) \$ 1,100 Renovation of "common ground" facility with the physical gateway to the synthetic battlespace environment  
 - (U) \$ 700 Support program management activities  
 - (U) \$ 6,853 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$0 Not Applicable

(U) FY 1999 (\$ in Thousands):

- (U) \$0 Not Applicable

Project 4582

Page 13 of 17 Pages

Exhibit R-2 (PE 0207601F)

1413

UNCLASSIFIED



**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

**DATE**

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

## 0207601F USAF Modeling and Simulation

## PROJECT

4582

(U) **B. Program Change Summary (\$ in Thousands)**

Total  
Cost

FY 1997

6,853

7,000

-147

FY 1999

FY 1998

FY 1997

6,853

7,000

-147

**b. SBIR**

### c. Omnibus or Other Above Threshold Reprogram

#### d. Below Threshold Reprogramming

### Adjustments to Budget Years Since FY 1998 PB

**Current Budget Submit/FY 1999 President's Budget**

0

0

6,853

(U) Change Summary Explanation:

Funding: FY 97 funding provided through Congressional add.

**Schedule: Not Applicable**

**Technical: Not Applicable**

(U) C. Other Program Funding Summary (\$ in Thousands) None

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Total To Compl
Cost								

(5)

Project 4582

Page 14 of 17 Pages

1414

Exhibit R-2 (PE 0207601F)

**UNCLASSIFIED**

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

7 - Operational System Development

PE NUMBER AND TITLE

0207601F USAF Modeling and Simulation

PROJECT

4582

(U) D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Virtual Facility Development	X	X	X	X	X	X	X	X				
(U) Physical Facility Development		X	X	X	X	X	X	X				
(U) Hardware/Software Development	X	X	X	X	X	X	X					

Project 4582

Page 15 of 17 Pages

Exhibit R-2 (PE 0207601F)

1415

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
7 - Operational System Development	0207601F USAF Modeling and Simulation	February 1998	4582
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>			
ASC Simulation and Analysis Facility (SIMAF)			
(U) Cost Categories		FY 1997	FY 1998
(U) a. Hardware/Software Development		3,800	FY 1999
(U) b. Contractor Support		2,153	
(U) c. Program Management Support		700	
(U) c. Travel		200	
(U) Total		6,853	0
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>			
<b>Performing Organizations:</b>			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC
			Project Office EAC
		Total Prior to FY 1997	Budget FY 1997
			Budget FY 1998
			Budget FY 1999
			Budget to Complete
			Total Program
<b>Product Development Organizations</b>			
ASC		6,853	6,853
<b>Support and Management Organizations</b>			
None		6,853	6,853
<b>Test and Evaluation Organizations</b>			
None			

Project 4582

Page 16 of 17 Pages

Exhibit R-3 (PE 0207601F)

1416

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT	4582	
BUDGET ACTIVITY		PE NUMBER AND TITLE			0207601F USAF Modeling and Simulation				
7 - Operational System Development									
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>									
Government Furnished Property:									
	Contract								
Item	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Description									
<u>Product Development Property</u>									
None									
<u>Support and Management Property</u>									
None									
<u>Test and Evaluation Property</u>									
None									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									
					0	6,853	0	0	6,853
					0	6,853	0	0	6,853

Project 4582

Page 17 of 17 Pages

Exhibit R-3 (PE 0207601F)

1417

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0207605F

UNCLASSIFIED

PE TITLE: Wargaming and Simulation Centers

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE 0207605F Wargaming and Simulation Centers								PROJECT 2888	
7 - Operational System Development											
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2888	Theater Air Command & Control Sim Facility (TACCSF)	0	5,140*	5,287	5,287	5,613	6,180	6,477	TBD	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

\*FY98 dollars are executed through PE0207601F, USAF Modeling and Simulation, but reported here for consistency.

(U) **A. Mission Description and Budget Item Justification**  
 This PE will provide funding for the Air Force's premier warfighter-in-the-loop simulation facility operated at Kirtland AFB, NM by Det 4, 505<sup>th</sup> Command and Control Evaluation Group (505 CCEG). On 1 Oct 97, the 505 CCEG and TACCSF will fall under the authority of the Air and Space Command and Control Agency (ASCC2A). TACCSF's mission is to provide advanced distributed simulation to the warfighter for improving theater air and space warfare systems and concepts of operation. TACCSF is used by the ASC2A and other customers who require high-fidelity battle management, command, control, communications, computer, and intelligence (BMC4I) simulation for establishing system requirements, assessing interoperability, integrating actual C4I and weapon system, and conducting joint test and evaluation. TACCSF performs the operations and maintenance (O&M) and upgrade of a complex equipment system consisting of 23 Air Force and Army weapon system simulators (containing over 2 million lines of software code), 18 internal computer networks, 36 mainframe computers, and 62 tactical warfighter-in-the-loop simulator consoles. These systems interoperate with joint service simulators and live fielded equipment via wide-area networks using state-of-the-art voice and data link communications over multiple long-haul communication circuits. FY98 funding is executed through PE0207601F, USAF Modeling and Simulation.

(U) **Acquisition Strategy**

(U)	FY 1997 (\$ in Thousands):	
-	(U) \$0	Total
(U)	FY 1998 (\$ in Thousands):	
-	(U) \$ 3,322	Continue to maintain core structure to support users conducting RDT&E, mission rehearsal, and concepts of operations development
-	(U) \$ 947	Continue to support requirements definition, test support, scenario development, analysis, system engineering support, and Verification, Validation, & Accreditation (VV&A) of core system
-	(U) \$ 531	Continue to upgrade the TACCSF infrastructure by connecting Distributed Interactive Simulation (DIS) and High Level Architecture (HLA)
-	(U) \$ 240	In support of program office including travel.
-	(U) \$ 100	Defense Simulation Internet (DSI) provides flexibility, dial-up connectivity between TACCSF and various other M&S facilities.
-	(U) \$ 5,140	Total

Project 2888

Page 1 of 5 Pages

Exhibit R-2 (PE 0207605F)

1419

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
7 - Operational System Development	0207605F Wargaming and Simulation Centers	February 1998	2888
(U) FY 1999 (\$ in Thousands):			
- (U) \$ 3,180	Continue to maintain core structure to support users conducting RDT&E, mission rehearsal, and concepts of operation development		
- (U) \$ 1,055	Continue to support requirements definition, test support, scenario development, analysis, system engineering support, and VV&A of core system		
- (U) \$ 708	Rehost AWACS and other systems from its ten year old equipment. The models should be rehosted to take advantage of object-oriented techniques allowing the sensor models to be imported into other simulations to save money and time. This design will also support tactical data link interfaces with operational systems		
- (U) \$ 244	In support of approximately 175 TDY's, office supplies, and host base support		
- (U) \$ 100	DIS provides flexibility, dial-up connectivity between TACCSF and various other M&S facilities.		
- (U) \$ 5,287	Total		
(U) B. Program Change Summary (\$ in Thousands)			
(U) FY1998 President's Budget	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	0	5,448	0
(U) Adjustments to Appropriated Value		5,448	
a. Cong Reductions		-178	
b. SBIR		-130	
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming			
(U) Adjustments to Budget Years Since FY 1998 PB			+5,287
(U) Current Budget Submit/FY 1999 President's Budget	0	5,140	5,287
			Continuing
Total Cost Continuing			

Project 2888

Page 2 of 5 Pages

Exhibit R-2 (PE 0207605F)

1420

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207605F Wargaming and Simulation Centers

2888

(U) Change Summary Explanation:

Funding: FY98 - \$130K for additional SBIR reduction.

FY99 - Program being executed in PE0270605F, Wargaming and Simulation Centers

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) PE27603F, O&M (AF 3400)			14,952	14,635	15,993	16,350	15,903	Continue	Continue
(U) Other Procurement (AF 3080)			523	527	556	557	561	Continue	Continue

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
(U) Maintain Core Structure	1	2	3	4	1	2	4
(U) Continue Technical Support					X		X
(U) Support DIS & HLA			X	X	X		X
(U) Unit Ops Exp			X	X	X		X
(U) DSI Service Fee			X	X	X		X
(U) Rehost AWACS & MCE			X	X	X		X

Project 2888

Page 3 of 5 Pages

Exhibit R-2 (PE 0207605F)

1421

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0207605F Wargaming and Simulation Centers	2888	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>			
		<u>FY 1997</u>	<u>FY 1998</u> <u>FY 1999</u>
(U) Cost Categories			
(U) a. Software Development		3,769	3,842
(U) b. Contractor Support		1,026	1,090
(U) c. Program Management Support		245	250
(U) d. Travel		100	105
(U) Total		0	5,287
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>			
<b>Performing Organizations:</b>			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Total Prior to FY 1997
			<u>FY 1997</u>
			<u>Budget FY 1997</u>
			<u>Budget FY 1998</u>
			<u>Budget to Complete</u>
			<u>Total Program</u>
Product Development Organizations			
Det 4, 505 <sup>th</sup> CCEG		1 Jan 90	
	continuing	continuing	0
			0
			5,140
			5,287
			continuing
			continuing
Support and Management Organizations			
None			
Test and Evaluation Organizations			
None			
Project 2888		Page 4 of 5 Pages	
		Exhibit R-3 (PE 0207605F)	

1422

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0207605F Wargaming and Simulation Centers

2888

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Government Furnished Property: N/A

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Property</u>									
None									
<u>Support and Management Property</u>									
None									
<u>Test and Evaluation Property</u>									
None									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									
				0	0	5,140	5,287	continuing	continuing
				0	0	5,140	5,287	continuing	continuing

Project 2888

Page 5 of 5 Pages

Exhibit R-3 (PE 0207605F)

1423

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0208006F

PE TITLE: Mission Planning Systems

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)		DATE							
BUDGET ACTIVITY		PROJECT							
7 - Operational System Development		3858							
PE NUMBER AND TITLE		MISSION PLANNING SYSTEMS							
0208006F		Mission Planning Systems							
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Air Force Mission Support System (AFMSS)	17,606	14,747	17,090	17,069	17,262	17,471	17,764	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description and Budget Item Justification**

(U) The Mission Planning System program was established in 1990 to consolidate mission planning system development efforts into a single unit-level mission planning system. This program maintains and preserves combat capability on old existing "legacy" planning systems which will migrate into a USAF wide standard mission planning system known as the Air Force Mission Support System (AFMSS). AFMSS acquisition strategy leverages military and commercial software integrated on Commercial-Off-The-Shelf (COTS) hardware. AFMSS encompasses evolutionary software and hardware development in an open systems architecture. AFMSS is the single unit-level mission planning system supporting all current/future aircraft and associated weapons: A/OA-10, F-15, F-16, F-22, EF-111, F-117, JSTARS, AWACS, ABCCC, U-2, AGM-130/GBU-15, JSSAM, JDAM, JSOW, B-1, B-2, B-52, KC-10, KC/EC/RC-135, C-5, C-9, C-17, C-21, C-141, MH/AH-6, MH-47, MH-53, MH-60, C/AC/EC/MC-130 and Tier II+/Tier III- Unmanned Aerial Vehicles (UAVs). AFMSS is currently being used operationally by six types of USAF aircraft and will be fielded to other types of aircraft as their software becomes available. It is also in daily use by the US Special Operations Command (USSOCOM).

(U) Mission Planning Systems are in budget activity 7, Operational System Development, because the program currently supports deployed AFMSS systems, which include transportables, non-deployable, and portable laptop workstations. AFMSS Block C1.5 software is operationally fielded and Block C2.0 is in the process of fielding to the Combat Air Forces (CAAF). AFMSS Block C2.1, which merges USSOCOM and USAF requirements into one common software baseline is currently in final development and will begin operational test and evaluation in the 3<sup>rd</sup> quarter of FY98.

(U) **Acquisition Strategy:**

(U) The AFMSS program is managed by the Directorate for Mission Planning Systems, Electronic Systems Center, Hanscom AFB, Massachusetts. Contractor for the AFMSS project is Sanders, a Lockheed Martin Company, Nashua, New Hampshire. In-house (Government) work is performed by Oklahoma City-Air Logistics Center (OC-ALC), Tinker AFB, Oklahoma; Sacramento Air Logistics Center (SM-ALC), McClellan AFB, Sacramento, California; Warner Robins Air Logistics Center, (WR-ALC), Warner Robins AFB, Georgia; and Ogden Air Logistics Center (OO-ALC), Hill AFB, Utah.

(U) The Joint Mission Planning Segment (JMPS) is a continuation effort of the AFMSS Mission Planning Systems (MPS) and Portable Flight Planning Software (PFPS) directed at merging the AFMSS and the Navy's Tactical Automated Mission Planning System (TAMPS), to form a single family of systems achieving Global Command and Control System (GCCS) compatibility through compliance with the Defense Information Infrastructure and Common Operating Environment (DII/COE).

(U) JMPS is in the presolicitation phase. The current plan is to begin migration of the existing USAF platforms in the FY02-FY05 time frame while individual weapon systems transition with planned Operational Flight Program (OFP) upgrades.

Project 3858

Page 1 of 8 Pages

Exhibit R-2 (PE 0208006F)

1425

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0208006F Mission Planning Systems	3858	
(U) FY 1997			
- (U) \$14,991	Continue additional C2.0/C2.1 software requirements development.		
- (U) \$ 1,785	Continue AFMSS A/W/E support/integration to A/OA-10, F-15, F-16, F-22, EF-111, F-117, JSTARS, AWACS, ABCCC, AGM-130/GBU-15, JDAM, JSOW, B-1, B-2, B-52, KC-10, KC/EC/RC-135, C-5, C-9, C-17, C-21, C-141, MH/AH-6, MH-47, MH-53, MH-60, U-2, and C/AC/EC/MC-130, WCMD, and SR-71.		
- (U) \$ 830	Continue AFMSS/PC rearchitecture (GCCS) migration study effort.		
- (U) \$17,606	Total		
(U) FY 1998			
- (U) \$ 6,493	Finalize C2.0/C2.1 Software development		
- (U) \$ 4,329	Begin C2.X software development.		
- (U) \$ 2,555	Begin JMPS rearchitecture (GCCS) migration effort.		
- (U) \$ 1,370	Continue AFMSS A/W/E support/integration to A/OA-10, F-15, F-16, F-22, EF-111, F-117, JSTARS, AWACS, ABCCC, AGM-130/GBU-15, JDAM, JSOW, B-1, B-2, B-52, KC-10, KC/EC/RC-135, C-5, C-9, C-21, C-17, C-141, MH/AH-6, MH-47, MH-53, MH-60, U-2, and C/AC/EC/MC-130, WCMD, and SR-71.		
- (U) \$14,747	Total		
(U) FY 1999			
- (U) \$ 7,860	Continue C2.X development with release scheduled for 2 <sup>nd</sup> quarter.		
- (U) \$ 7,860	Continue JMPS re-architecture (GCCS) migration.		
- (U) \$ 1,370	Continue AFMSS A/W/E support/integration to A/OA-10, F-15, F-16, F-22, EF-111, F-117, JSTARS, AWACS, ABCCC, AGM-130/GBU-15, JDAM, JSOW, B-1, B-2, B-52, KC-10, KC/EC/RC-135, C-5, C-9, C-17, C-21 C-141, MH/AH-6, MH-47, MH-53, MH-60, U-2, and C/AC/EC/MC-130, WCMD, and SR-71.		
- (U) \$17,090	Total		

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0208006F Mission Planning Systems

3858

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998)	17,635	16,526	17,434	
(U) Appropriated Value	18,500	16,526		
(U) Adjustments to Appropriated Value				
a. General Congressional Reductions	-423	-1394		
b. Small Business Innovative Research (SBIR)	-442	-385		
c. Below Threshold Reprogramming				
d. Rescissions	-29			
(U) Adjustments to Budget Years Since FY98 PB			-344	
(U) FY 1999 President's Budget	17,606	14,747	17,090	TBD

## (U) Change Summary Explanation:

- (U) Funding: Reductions for FY97 - \$423 Inflation adjustment and - \$29 in actuals. Reductions in FY98 are - \$210 Federally Funded Research and Development Centers (FFRDC), - \$385 reduction in SBIR, - \$645 Consultant and Advisory Services, - \$206, and - \$86 congressional mark and - \$247 general.
- (U) Schedule: FY 97-98 operational testing and evaluation for ongoing C2.0 and C2.1. Presently six aircraft are operationally fielded with C2.0.
- (U) Technical: AFMSS C1.5 software update release to C1.0 is operationally fielded. Other aircraft and weapons will integrate with AFMSS once C2.0/C2.1 is available.

Project 3858

Page 3 of 8 Pages

Exhibit R-2 (PE 0208006F)

1427

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE February 1998							
7 - Operational System Development		PROJECT 3858							
		PE NUMBER AND TITLE 0208006F Mission Planning Systems							
(U) C. Other Program Funding Summary (\$ in Thousands)									
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To
		14,648	14,415	9,189	12,932	17,777	16,781	16,747	Compl
(U) Other Procurement, AF									Cont
WSC 833040, Theater Air Control System									Total
Improvement (TACSI)									Cost
(U) Other Procurement, AF, WSC 86190A, Initial		861	950	897	1079	1094	1107	1113	TBD
Spares									
(U) Operations & Maintenance, AF, 0208006F		18,398	23,064	25,038	24,923	28,356	25,044	26,611	Cont
									TBD
(U) O&M funds for PE 28006F support the software and hardware maintenance costs of AFMSS and CMPS. These funds also support the maintenance of the following existing operational systems until replaced by AFMSS: Mission Support System II (MSS IIA) supports existing combat capability for the F-15 and F-16 aircraft mission planning (F/RF-4 and F-111 are now retired); Mission Data Preparation System (MDPS) supports conventional and nuclear mission planning, aircraft/weapon avionics loading, compatibility between evolving B-1B, B-52H avionics, their weapons systems, and USSTRATCOM. O&M funding supported approximately 240 older systems in FY94. By FY99, a similar amount of funding will support over AFMSS 1500 mission planning systems world-wide.									
(U) There are no other related RDT&E activities for unit level mission planning in the USAF. Over 40 individual aircraft and weapons programs develop their respective software that is used in conjunction with the AFMSS core software. The aircraft and weapons software is a complementary, synergistic effort that provides specific aircraft and weapons information and functionality to the core AFMSS software. The combined software gives the warfighter the full spectrum of mission planning and combat capabilities for their aircraft or weapon including interoperability with planned Theater Battle Management (TBM) systems.									

Project 3858

Page 4 of 8 Pages

Exhibit R-2 (PE 0208006F)

1428

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0208006F Mission Planning Systems

3858

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999			
	1	2	3	4	1	2	3	4
(U) AFMSS Block C Workstation Deliveries		X						
(U) AFMSS Block C2.0 Software Release	X							
(U) AFMSS Block C2.1 Software Release								
(U) AFMSS Portable Deliveries	X						X	
(U) AFMSS Block C2.0 OT&E begin		X						
(U) AFMSS Block C2.X Software Development								
(U) AFMSS Block C2.X Engineering Software Releases / FQT					X			
(U) AFMSS Block C2.X Software Release						X		
(U) CMPS Software Delivery	X				X			
(U) JMPS Migration and Rearchitecture								X
GCCS Effort								
(U) AFMSS Block C2.1 OT&E Begin								

Project 3858

Page 5 of 8 Pages

Exhibit R-2 (PE 0208006F)

1429

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY		PROJECT		
7 - Operational System Development		3858		
		0208006F Mission Planning Systems		
		PE NUMBER AND TITLE		
		FY 1997		
		FY 1998		
		FY 1999		
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
(U) Primary Software Development		12,184	9,101	10,802
(U) Aircraft/Weapons/Electronics (A/W/E) Development Spt.		1,352	1,032	1,162
(U) Systems Engineering		1,682	2,506	2,734
(U) Program Management		1,508	1,386	1,538
(U) Miscellaneous		880	722	854
(U) Total		17,606	14,747	17,090

Project 3858

Page 6 of 8 Pages

Exhibit R-3 (PE 0208006F)

1430

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0208006F Mission Planning Systems

3858

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
TBD	TBD	TBD				0	2,000	4,000	35,962	41,962
Lockheed Martin	CPAF	Dec 92	193,532	193,532	73,831	13,536	8,133	7,964		103,464
Logicon	CPAF	Aug 94	2,438	2,438	2,438	0	0	0	0	2,438
Boeing	FFP		6,455	6,455	6,455	0	0	0	0	6,455
Miscellaneous					2,892	0	0	0	0	2,892
ESC					15,296	880	722	854	2,624	20,376
<u>Support and Management Organizations</u>										
FFRDC					7,166	1,682	2,506	2,734	8,924	23,012
Miscellaneous					5,124	1,508	1,386	1,538	4,987	14,543
<u>Test and Evaluation Organizations</u>										
n/a	n/a	n/a	n/a	n/a	0	0	0	0	0	0

Project 3858

Page 7 of 8 Pages

Exhibit R-3 (PE 0208006F)

1431

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		3858		
7 - Operational System Development		0208006F Mission Planning Systems				
Government Furnished Equipment:						
none						
Subtotal Product Development	100,912	14,416	10,855	12,818	38,586	177,587
Subtotal Support and Management	12,290	3,190	3,892	4,272	13,911	37,555
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	113,202	17,606	14,747	17,090	52,497	215,142

Project 3858

Page 8 of 8 Pages

Exhibit R-3 (PE 0208006F)

Project 3858

Page 8 of 8 Pages

Exhibit R-3 (PE 0208006F)

1432

UNCLASSIFIED

**UNCLASSIFIED**

**PE TITLE: Information Warfare Support**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0208021F Information Warfare Support

## PROJECT

**0374**

	COST (\$ In Thousands)	FY 1997 Estimate	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
0374	Electronic Combat Support, C3 Protection/Multi-mission. Technology and Support	1,273	1,299	1,375	1,401	1,427	1,431	6,085	Continuing	Continuing

(U) **A. Mission Description and Budget Item Justification** This program studies, develops and demonstrates IW/C2W prototypes to provide warning, self protection, and support to personnel and equipment against combat systems employed by enemy forces. It identifies existing military and commercial research and development efforts which can satisfy unfulfilled operational requirements as identified by the Unified Commands, and quickly bridge the gap between technology developments and meld the technology into the warfighter's operational requirements. The Secretary of Defense identified the need for this capability in 1983, and with unanimous approval of the services and the Unified Commands, JCS made this function a part of the Joint Command and Control Warfare Center (JC2WC) mission (formerly the Joint Electronic Warfare Center (JEWCC). The Air Force as executive agent is responsible for the total funding of this effort.

**(U) FY 1997 (\$ in Thousands):**

- |   |     |        |                                                                                |
|---|-----|--------|--------------------------------------------------------------------------------|
| — | (U) | \$499  | Joint Information Warfare project for JCS J-3                                  |
| — | (U) | \$ 54  | Demonstrate the capabilities of a previously developed system to several CINCS |
| — | (U) | \$720  | Test and demonstrate Sounder                                                   |
| — | (U) | \$1273 | Total                                                                          |

(U) FY 1998 (\$ in Thousands):

- |   |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| — | (U) \$1299 | The center has established a Joint Project Office (JPO) in response to recent tasking by the Joint Staff. This office will support the CINCs through rapid prototyping, briefings and demonstrations of state of the art technology currently under development. The Center will conduct field demonstrations of the operational utility of IW technologies projects. This will require coordination with the Joint Staff, CINCs, service acquisition command, laboratories, and various intelligence agencies. This will include IW source and target systems analysis, operations, and demonstration, and design, development and operations effectiveness assessment systems. |
| — | (U) \$1299 | Total                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

Project 0374

Page 1 of 3 Pages

Exhibit R-2 (PE 0208021F)

1433

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	0374
7 - Operational System Development		0208021F Information Warfare Support	
(U) <u>FY 1999 (\$ in Thousands):</u>			
- (U) \$1375	The center has established a Joint Project Office (JPO) in response to recent tasking by the Joint Staff. The JPO office will support the CINCs through rapid prototyping, briefings and demonstrations of state of the art technology currently under development. The Center will conduct field demonstrations of the operational utility of IW technologies projects. This will require coordination with the Joint Staff, CINCs, service acquisition command, laboratories, and various intelligence agencies. This will include IW source and target systems analysis, operations, and demonstration, and design, development and operations effectiveness assessment systems.		
- (U) \$1375	Total		
- (U)	<p>Work performed by: The Joint Command and Control Warfare Center at Kelly AFB TX performs independent studies and analysis leading to development of Pre-Milestone Zero prototypes for field demonstrations and operations. When technology is available in Service and Industry labs, the JC2WC arranges for the development of a prototype and field demonstration of the prototype. Laboratories include Phillips Lab at Hanscom AFB MA, and Kirtland AFB NM, The Naval Research Lab, Washington DC. When required technologies are not available within DoD, JC2WC manages contractual efforts to produce, test and demonstrate prototypes. The Center also facilitates the exchange of information between the operators in the fleet and field and the laboratories, industry and Service program managers. The JC2WC currently has an Engineering Support Contract with Southwest Research Institute (SwRI), San Antonio TX, to perform engineering analysis and design, studies, reports, systems integration, fabrication, and software development. Under JC2WC leadership, the government and contractor labs work to deliver products that support the warfighting CINCs and address operations IW/C2W shortfalls.</p>		

Project 0374

Page 2 of 3 Pages

Exhibit R-2 (PE 0208021F)

1434

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0208021F Information Warfare Support

0374

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget	1273	1360	1403
(U) Appropriated Value	1329	1360	
(U) Adjustments to Appropriated Value			
a. Cong Gen Reductions	-37	-44	
b. SBIR	-17	-17	
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	-2		
e. Recision			
(U) Adjustments to Budget Years Since FY 1998 PB			-28
(U) Current Budget Submit/President's Budget	1273	1299	1375

(U) Change Summary Explanation:

Funding:

Schedule:

Technical: FY98 reduction eliminated development of a software measurement package, which handicaps the High Power Microwave project's weapon effects characterization.

(U) C. Other Program Funding Summary (\$0 in Thousands)

(U) none

(U) D. Schedule Profile

N/A

Project 0374

Page 3 of 3 Pages

Exhibit R-2 (PE 0208021F)

1435

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998		
BUDGET ACTIVITY					PE NUMBER AND TITLE						PROJECT		
7 - Operational System Development					0208031F WRM-Equipment/Secondary Items						4668		
COST (\$ In Thousands)					FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4668	Shelter Development				0	0	1,470	1,493	1,517	2,632	2,862	0	9,974
	Quantity of RDT&E Articles				0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

This program funds development, testing and evaluation of materials, equipment, and procedures for Air Force Bare Base mobility capability better known as Harvest Falcon (HF) and Harvest Eagle (HE). Bare Base is designated and sized to support two near Major Theater Wars (MTW), which provides theater warfighters billeting, industrial, and air field capability to support a total of 68,200 combat troops, 822 aircraft at 15 austere locations... building complete bases from the ground up. Of the two systems, HF is the newest and has the greatest capability (housekeeping and airbase infrastructure). It is an outgrowth of the FY90-94 Defense Guidance that tasks the Air Force to support United States Central Command (USCENTCOM) Rapid Deployment Forces and save critical airlift resources through theater prepositioning. The outstanding reputation of the Air Force Bare Base program, established during the Gulf War, has continued in successive Military-Operations-Other-Than-War (MOOTW) throughout the world. These include Operations Southern Watch, Provide Relief, Provide Promise, Provide Comfort, Restore Hope, Sea Signal, Uphold Democracy, and Joint Endeavor. Harvest Falcon remains a very top priority with USCINCENT. The Air Force Bare Base program has had unparalleled success meeting the demands in support of MOOTW. This has taken its toll on equipment and as a result the majority of HF and HE requires comprehensive repair or replacement. Equipment has been in use over three years... well beyond design parameters AF reconstitution efforts continue, on-going MOOTW deployments delay this process. This program is in Budget Activity 7 because it supports development of operational HF/HE equipment, leading to deployment of new systems which provide measurable reductions in airlift sorties and increased operational efficiencies.

Bare Base Systems Cold Weather Package: Harvest Falcon housekeeping sets are subject to worldwide deployment and a limited capability must be established to function in extreme cold weather conditions. This effort provides freeze protection for Harvest Falcon water distribution systems (pumps, pipes, etc.) and capabilities to heat tents/shelters deployed to extreme cold weather environments.

Deployable Waste Management Systems will reduce the amount of solid, medical and hazardous waste material that must be managed and/or disposed. Solutions to be investigated include on-site incineration for solid, medical and hazardous waste materials, shredders and compactors for landfill refuse, and a closed loop waste water processing system to minimize the quantity of wasted products and reduce the need for large quantities of water to process waste at the contingency base.

**(U) Acquisition Strategy:** The SPO will evaluate and test commercial solutions to determine options for militarizing commercially-available products. It will also evaluate work performed by Wright Laboratories, which has identified plasma-arc technology as a potential solution to safely, effectively and efficiently incinerate medical and hazardous wastes. This technology also provides capability to eliminate other waste materials, such as solid wastes/garbage, and other materials placed in landfills. Contracts expected to be competitive, firm fixed price.



UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational System Development</b>	<b>0208031F WRM-Equipment/Secondary Items</b>	<b>4668</b>	
(U) FY 1997 (\$ in Thousands):			
- (U) \$	0	TOTAL	
(U) FY 1998 (\$ in Thousands):			
- (U) \$	0	TOTAL	
(U) FY 1999 (\$ in Thousands):			
- (U) \$	600	Initiate EMD for Bare Base Systems Cold Weather Package	
- (U) \$	600	Initiate EMD for Deployable Waste Management System	
- (U) \$	270	Continue other technical support	
- (U) \$	1,470	TOTAL	

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0208031F WRM-Equipment/Secondary Items

4668

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total
	0	0	0	Cost
				Cont

(U) Previous President's Budget

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional Gen Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogramming

d. Below Threshold Reprogramming

e. Rescissions

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/1999 PB

1,470

1,470

Cont

(U) Change Summary Explanation:

Funding: FY99 new start of \$1.470M to fund crucial capabilities for HF/HF deployment kits.

Schedule: EMD to begin in FY99. Production of first end item anticipated in FY01.

Technical: New start -- no change to report.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement, AF, Other Base Maintenance and Support Program: WRM-Equipment/Secondary Items (0208031F) (WSC 845420), P-1: 99	21,478	24,048	35,973	35,757	37,667	13,179	13,423	Cont	Cont

Project 4668

Page 3 of 7 Pages

Exhibit R-2 (PE 0208031F)

1439

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)						DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT			
7 - Operational System Development		0208031F WRM-Equipment/Secondary Items				4668			
(U) D. <u>Schedule Profile</u>									
		<u>FY 1997</u>		<u>FY 1998</u>		<u>FY 1999</u>			
1		2	3	4	1	2	3	4	
BARE BASE COLD WEATHER PKG									
- Milestone I/II Brief					X				
- Contract Award						X			
- Preliminary Design Review									X
DEPLOYABLE WASTE									
MANAGEMENT SYSTEM									
- Milestone I/II Brief					X				
- Contract Award						X			
- Preliminary Design Review									X
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>									

Project 4668

Page 4 of 7 Pages

Exhibit R-2 (PE 0208031F)

Project 4668

Page 4 of 7 Pages

Exhibit R-2 (PE 0208031F)

1440

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0208031F WRM-Equipment/Secondary Items	4668	
(U) A. Project Cost Breakdown (\$ in Thousands)			
		<u>FY 1997</u>	<u>FY 1998</u>
(U) Contracts		0	550
(U) A&AS Support		0	450
(U) Other Government Agencies			180
(U) Material/Equipment			20
(U) Other Technical Support			270
(U) Total		0	1,470

Project 4668

Page 5 of 7 Pages

Exhibit R-3 (PE 0208031F)

1441

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4668

## 7 - Operational System Development

0208031F WRM-Equipment/Secondary Items

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Bare Base Systems Cold	TBD	TBD	2,250	2,250	0	0	0	600	Cont	Cont
Weather Package Deployable Waste Management System	TBD	TBD	7,940	7,940	0	0	0	600	Cont	Cont
Sub-Total			10,190	10,190	0	0	0	1,200	Cont	Cont
Support and Management Organizations										
					0	0	0	270	Cont	Cont

Test and Evaluation Organizations: N/A

Project 4668

Page 6 of 7 Pages

Exhibit R-3 (PE 0208031F)

1442

UNCLASSIFIED

### RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

**0208031F WRM-Equipment/Secondary Items**

## PROJECT

**4668**

Government Furnished Property: None

Project 4668

Page 7 of 7 Pages

Exhibit R-3 (PE 0208031F)

1443

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0208060F

PE TITLE: Theater Missile Defense

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0208060F Theater Missile Defense									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		21,740	26,873	31,057	29,605	32,394	27,390	24,069	Continuing	TBD	
4478 Command, Control, Communications, Computers, and Intelligence Enhancements		13,015	19,288	23,123	21,229	23,479	17,264	14,026	Continuing	TBD	
4479 Attack Operations Concept Development		8,725	7,585	7,934	8,376	8,915	10,126	10,553	Continuing	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

Air Force Theater Missile Defense (TMD) is focused in two areas: Command, Control, Communications, Computers, and Intelligence (C4I) enhancements and improvements to existing Attack Operations systems. AF TMD concentrates on defining improvements to existing operational capabilities, developing and evaluating prototypes, demonstrating as well as simulating modifications during operational concept demonstrations, and coordinating the transition of these capabilities to operational systems. C4I improvements contribute greatly to the overall effectiveness of TMD systems developed by each of the Services and the Ballistic Missile Defense Organization (Patriot, THAAD, etc.). C4I enhancements improve our ability to assess, target, plan and task attackers to counter Theater Missile (TM) threats. The C4I program encompasses JTIDS TMD Upgrades (including, for example, TMD Message Set Integration and JTIDS Range Extension), Dynamic Battle Management, Operations Decision Tools (Time Critical Target Aid (TCTA), Joint Defensive Planner, Attack Operations Decision Aid (AODA), Integrated Surveillance System (ISS), Communications Planning Module (CPM), Intel Support Systems (Intel Support Concept, Operational Intel and support tools) and integration of these systems within the Air Force and among the Services. Attack Operations focuses on improving the ability to locate, identify, target and destroy theater missiles and supporting infrastructure, including theater missile threats in production, prior to and during launch, as well as soon after launch before critical mobile targets are able to egress to hide locations. The foundation for Attack Operations is improved C4I and automatic target cueing/recognition (ATC/R) upgrades to one or more airborne platforms (Joint STARS, F-15E, Rivet Joint, U-2). The TMD program seeks to improve existing operational capability, evaluate and demonstrate prototypes, as well as simulate and demonstrate modifications during operational concept demonstrations. This program is in Budget Activity 7 because its projects are upgrades to existing operational systems.

**(U) Acquisition Strategy:** HQ Avionics Systems Center (ASC) provides the program management for the concept exploration of TMD Attack Operations. ASC conducts lab demonstrations with Wright Labs and supports Concept of Operations (CONOPS) development and requirements definition by analyzing and demonstrating measures of effectiveness for various sensor improvements and cueing schemes. HQ Electronic Systems Center (ESC) provides program management for the concept exploration of C4I enhancements. Prototypes and analysis of improvements to existing C4I assets will complement the Attack Operations effort with combined participation in Operational Concept Demonstrations. These Attack Operations and C4I analyses and demonstrations are specifically targeted against operational deficiencies identified in the TMD Mission Area Plan (MAP), are traceable to the AF and JROC Mission Need Statement (MNS) and are consistent with the Air Force and Joint TMD CONOPS and in accordance with Joint Doctrine. Integration of TMD requirements and fielding of proposed material solutions will continue beyond concept exploration in the appropriate

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		
7 - Operational System Development		0208060F Theater Missile Defense		
program element for a particular system. For example, the TMD demonstration and requirements analysis for F-15E ATC/R may transition into a F-15E Engineering & Manufacturing Development (EMD) and P31 project within the F-15E program element. Existing contracts will be used for those systems where engineering change proposals are appropriate. Systems Engineering and Technical Analysis (SETA) contracts will be used to support the requirements definition phase of TMD improvements. In those areas where new material solutions are necessary to correct a deficiency, the source selection process will be followed to establish a new contract.				
(U) B. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget	FY 1997	FY 1998	FY 1999	Total
(U) Appropriated Value	30,585	29,182	31,682	Cost
(U) Adjustments to Appropriated Value	31,285	28,182		TBD
a. Congressional General Reductions	-700	1,727		
b. Small Business Innovative Research (SBIR)		-582		
c. Omnibus or Other Above Threshold Reprogram	-8,794			
d. Below Threshold Reprogramming				
e. Rescissions	-51			
(U) Adjustments to Budget Years Since FY 1998 PB	0		-625	
(U) Current Budget Submit/FY 1999 President's Budget	21,740	26,873	31,057	TBD
(U) Change Summary Explanation:				
Funding: FY97 realignment for UH-1N Simulator integration into the TACCSF simulation environment; funds realigned from 3600 to 3010 and transferred to Aircraft Procurement Post Production Charges - BP13.				
Schedule: N/A				
Technical: N/A				
(U) C. Other Program Funding Summary (\$ in Thousands): See individual projects.				

Page 2 of 15 Pages

Exhibit R-2 (PE 0208060F)

Page 2 of 15 Pages

Exhibit R-2 (PE 0208060F)

1446

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

### BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

## 0208060F Theater Missile Defense

**(U) D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
	1 2	1 2	1 2
(U) ATC/R Demos (F-15E/Surveillance)			
(U) TPS-75 Expert Missile Tracker	X	X	X
Prototypes/Contingency Support Systems		X	
Live Fire Demo			
(U) TACCSF			
(U) Intel Support Systems: ISC updates; Syria, Iran, and Iraq, and automation of country studies		X	
(U) TMD TACS systems requirements (JTIDS message upgrades, decision aids & planning tools)	X	X	
(U) Ops Concept Demonstrations	X	X	X

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0208060F Theater Missile Defense								4478	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4478	Command, Control, Communications, Computers, and Intelligence Enhancements	13,015	19,288	23,123	21,229	23,479	17,264	14,026	Continuing	TBD	
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>C4I enhancements are needed to reduce the battle management and command &amp; control timelines associated with the theater missile threat. The C4I program includes:</p> <ol style="list-style-type: none"> <li>1) Operations and maintenance of the Theater Air Command and Control Simulation Facility (TACCSF) - FY98 transition to PE 27601F;</li> <li>2) Procurement of four MCE/TPS-75 prototypes with expert missile tracker (EMT), correlator capability and live fire demo;</li> <li>3) Intel Support Systems which include the development and revision of the Intel Support Concept (ISC), digitization of the country studies and development of processes and tools for automated application of TMD Intelligence Preparation of the Battlespace (IPB);</li> <li>4) JTIDS TMD upgrades which are the development and integration of TMD messages into JTIDS host platforms and the extension of JTIDS beyond line of sight;</li> <li>5) Operations Decision Support Tools which include the integration of the Time Critical Target Aid into TBM Core Systems (TBMCS) architecture, the development and migration of the Joint Defensive Planner into TBMCS and initiating the development of the Attack Operations Decision Aid and Communications Planning Module.</li> <li>6) Dynamic Battle Management concept, which enhances the forward execution capabilities of the TACS to counter the short timeline of time critical targets. This includes the development, integration and test of the DBM capability on an airborne platform. The program will leverage off the capabilities of the current ground Combat Integration Capability (CIC) program which integrates and fuses various intelligence and surveillance feeds to provide the Joint Force Commander (JFC)/Joint Force Air Component Commander (JFACC) with an effective battle management capability.</li> </ol>											
(U) FY 1997 (\$ in Thousands):											
(U) 6,055	Completed TACCSF operations support for C4I simulation and analysis.										
(U) 3,000	Continued MCE/TPS-75 missile tracker and correlator capability development.										
(U) 1,300	Intel Support Systems - Developed Intelligence Support Plan for Combat Integration Capability (CIC); Continued development of tool for automatic application of digitized TMD IPB information.										
(U) 2,660	JTIDS TMD message integration into JSTARS, ABCCC and AOC; Completed JTIDS Range Extension performance and cost analysis;										
	Continued development of TCTA (DIS compatible) and DPM V1.0 and transitioned to TBMCS; Completed DBM trade and analysis/platform impacts and CONOPS validation; Investigated procedures and advanced technology for Attack Operations Decision Aid (AODA).										
(U) \$13,015	Total										

Project 4478

Page 4 of 15 Pages

Exhibit R-2 (PE 0208060F)

1448

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0208060F Theater Missile Defense	4478	
(U) FY 1998 (\$ in Thousands):	Integrate Intelligence Preparation of the Battlespace (IPB) Tool with TBMCs; Adapt IPB tool for Air Intelligence Agency's Virtual Production environment; Investigate area limitation functionality and tool integration, Demonstrate automated procedures and system capabilities in Ops Concept Demonstrations, CINC experiments and Joint Exercises.		
(U) 2,810	Conduct MCE/TPS-75 Missile Tracking Live Fire Test and final delivery.		
(U) 1,000	Continue to integrate JTIDS TMD message sets into JTIDS host platforms; Begin JTIDS Range Extension prototype development and implementation; Establish Airborne DBM development environment and DBM unique prototyping/technology development; Initiate Communications and architecture analyses.		
(U) 8,078	Integrate JDP V1.0 and TCTA (ground targeting) with TBMCs and release; Begin AODA prototype/technology development. Explore use of promising planning tools, C2 decision aids, communication and computer processing improvements, sensor fusion technology and sensor upgrade impacts to BMC4I Theater Missile Defense connectivity.		
(U) 7,400	Total		
(U) \$19,288			
(U) FY 1999 (\$ in Thousands):	Continue to adapt the IPB tool for Air Intelligence Agency's Virtual Production environment; Demonstrate improved automated procedures and IPB system capabilities in Ops Concept Demonstrations (OCDS), CINC experiments and Joint Exercises.		
(U) 4,350	JTIDS/Link-16 Integration: Complete integration of JTIDS/Link-16 TMD message sets onto major C2 nodes; Continue JTIDS Range Extension implementation.		
(U) 8,860	Operations Decision Support Tools - Upgrade JDP (deployment planner), continue to explore BMC4I/sensor improvements that compress Theater Missile engagement timelines and demonstrate integrated capabilities in OCDS, CINC experiments, and Joint Exercises. DBM platform prototypes: battle management, target nomination and communication improvements; Complete AODA prototype/technology development and design for CIC integration.		
(U) 9,913	Total		
(U) \$23,123			

Project 4478

Page 5 of 15 Pages

Exhibit R-2 (PE 0208060F)

Project 4478

Page 5 of 15 Pages

Exhibit R-2 (PE 0208060F)

1449

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0208060F Theater Missile Defense

PROJECT

4478

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget	21,860	21,162	23,588	TBD
(U) Appropriated Value	21,860	21,162		TBD
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-514	-1,456		
b. Small Business Innovative Research (SBIR)		-418		
c. Omnibus or Other Above Threshold Reprogram	-8,794			
d. Below Threshold Reprogramming				
e. Rescissions	-51			
(U) Adjustments to Budget Years Since FY 1998 PB			-465	
(U) Current Budget Submit/FY 1999 President's Budget	13,015	19,288	23,123	TBD

## (U) Change Summary Explanation:

Funding: FY97 realignment for integration of UH-1N Simulator into the TACCSF simulation environment; funds realigned from 3600 to 3010 and transferred to Aircraft Procurement Post Production Charges - BP13.

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands):

	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	To Complete	Total Cost
RDT&E, BMDO PMA F3261, BM/C4I	13,115	12,654	11,701	5,938	4,958	10,706	10,736	TBD	TBD

Project 4478

Page 6 of 15 Pages

Exhibit R-2 (PE 0208060F)

1450

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY										PROJECT			
7 - Operational System Development										4478			
PE NUMBER AND TITLE										0208060F Theater Missile Defense			
(U) D. <u>Schedule Profile:</u>													
(U) TPS-75 Expert Missile Tracker Prototypes/Contingency Support Systems (U)TACCSF	1	FY1997		4	1	FY1998		4	1	FY1999			
		2	3			2	3			2	3		
(U) Intel Support Systems: ISC updates; Syria, Iran, and Iraq, and automation of country studies				X				X				X	
(U) TMD TACS systems requirements (JTIDS message upgrades, decision aids & planning tools)			X				X			X			

Project 4478

Page 7 of 15 Pages

Exhibit R-2 (PE 0208060F)

Project 4478

Page 7 of 15 Pages

Exhibit R-2 (PE 0208060F)

1451

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY		PROJECT		
7 - Operational System Development		4478		
		0208060F Theater Missile Defense		
		PE NUMBER AND TITLE		
		FY 1997	FY 1998	FY 1999
(U) A. <u>Project Cost Breakdown (\$0 in Thousands)</u>				
(U) TACCSF		6,055	0	0
(U) Intelligence Support Systems (ISC/Automated IPB)		1,300	2,810	4,350
(U) MCE/TPS-75 Missile Tracking System		3000	1,000	0
(U) JTIDS/Link-16 Integration & Beyond LOS Capability		520	5,645	8,860
(U) Dynamic Battle Management (DBM)		300	3,270	6,378
(U) Operations Decision Support Tools (planning tools, decision aids, C4I processing and sensor fusion technologies)		1,840	6,563	3535
(U) Total		13,015	19,288	23,123

Project 4478

Page 8 of 15 Pages

Exhibit R-3 (PE 0208060F)

1452

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0208060F Theater Missile Defense

4478

## (U) B. Budget Acquisition History and Planning Information (\$0 in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Martin Marietta (TACCSF)	FFP	Oct 95	N/A	N/A	9,100	6,055	0	0	0	15,155
North/Grumman (TPS-75)	FFP	Oct 95	N/A	N/A	0	2,142	1,000	0	0	3,142
Zeltech/SPARTA PSR (IPB)	T&M	May 96	N/A	N/A	500	830	2,294	3,693	Continuing	7,317
Alphatech (JDP)	T&M	Mar 95	N/A	N/A	0	840	0	0	0	840
Boeing (DBM)	T&M	Dec 97	N/A	N/A	0	0	500	1,500	Continuing	2,000
Northrop	T&M	Dec 97	N/A	N/A	0	0	500	1,500	Continuing	2,000
Grumman (DBM)	T&M	Nov 97	N/A	N/A	0	0	250	330	Continuing	580
BDM (DBM)	T&M	Jan 98	N/A	N/A	0	0	731	1,135	Continuing	1,866
Motorola (TCTA)	T&M	Mar 96	N/A	N/A	0	885	516	0	0	1,401
LMCCS (JDP)	T&M	Oct 97	N/A	N/A	0	0	1,400	0	0	1,400
For Profit Contractor (AODA)	TBD	Oct 97	N/A	N/A	0	0	1,316	2,100	Continuing	3,416
For Profit Contractor (MSI)	TBD	Dec 97	N/A	N/A	0	0	1,049	350	Continuing	1,399
Lock/Mart (MSI)	T&M	Mar 97	N/A	N/A	0	50	0	0	0	50
For Profit Contractor (CPM)	T&M	Oct 97	N/A	N/A	0	0	93	500	Continuing	593

Project 4478

Page 9 of 15 Pages

Exhibit R-3 (PE 0208060F)

1453

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	PROJECT
BUDGET ACTIVITY										February 1998	4478
7 - Operational System Development										PE NUMBER AND TITLE	
Contractor or										0208060F Theater Missile Defense	
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete Continuing	Total Program	
For Profit	TBD	Nov 97	N/A	N/A	0	0	160	1,194	Continuing	1,354	
Contractor											
(Analyses)											
MASC	T&M	Nov 96	N/A	N/A	0	370	0	0	Continuing	370	
For Profit	TBD	Oct 97	N/A	N/A	0	0	2,619	5,152	Continuing	7,771	
Contractor (JRE)											
<u>Support and Management Organizations</u>											
FFRDC			N/A	N/A	1,605	975	1,994	2,054	Continuing	6,628	
Non-FFRDC			N/A	N/A	1,935	534	1,040	1,071	Continuing	4,580	
(ESC)											
Non-FFRDC			N/A	N/A	0	0	1,640	540	Continuing	2,180	
(ACC)											
Non-FFRDC			N/A	N/A	0	0	900	927	Continuing	1,827	
(XORFS)											
HQ ESC			N/A	N/A	2,251	334	1,286	1,077	Continuing	4,948	
<u>Test and Evaluation Organizations</u>											
TBD											
<u>Government Furnished Property</u>											
None											
Subtotal Product Development					9,600	11,172	12,428	17,454	Continuing	50,659	
Subtotal Support and Management					5,791	1,843	6,860	5,669	Continuing	20,163	
Subtotal Test and Evaluation					0	0	0	0	0	0	

Project 4478

Page 10 of 15 Pages

Exhibit R-3 (PE 0208060F)

1454

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT	4478
BUDGET ACTIVITY										PE NUMBER AND TITLE			
7 - Operational System Development										0208060F Theater Missile Defense			
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program			
Total Project					15,391	13,015	19,288	23,123	Continuing	70,817			

Project 4478

Page 11 of 15 Pages

Exhibit R-3 (PE 0208060F)

Project 4478

Page 11 of 15 Pages

Exhibit R-3 (PE 0208060F)

1455

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0208060F Theater Missile Defense								4479	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4479	Attack Operations Concept Development	8,725	7,585	7,934	8,376	8,915	10,126	10,553	Continuing	TBD	
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>Improvements in Attack Operations are based on the ability to locate, identify, and destroy theater missiles, their launchers, and associated infrastructure on the ground. In addition to the enhancements to C4I, the Attack Operations Project focuses on advanced sensor and target identification capabilities, CONOPS and requirements development for TMD offensive counter-air and their optimized integration with defensive systems. Specific technologies such as automatic target cueing/recognition (ATC/R) and moving target indicator/track (MTI/T) upgrades to Joint STARS, F-15E and potentially the U-2, F-16 and UAVs are to be analyzed using constructive analysis and evaluated through Technology/Operational Concept Demonstrations and CINC Experiments along with command and control connectivity upgrades critical to their optimum employment against time-critical targets. Effectiveness and affordability parameters defined will be used in support of follow on acquisition decisions involving P3I upgrades to existing weapon systems and potential new start programs within existing/other program elements.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <p>(U) 1,190 Conducted demonstration of surveillance ATR prototype.</p> <p>(U) 3,367 Conducted Attack Operations Operational Concept Demonstration.</p> <p>(U) 1,528 Continued analysis of architectures with weapon system upgrades, improved model fidelity and threat scenarios.</p> <p>(U) 2,640 Conducted demonstration of F-15E ATC/R prototype.</p> <p>(U) \$8,725 Total</p> <p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <p>(U) 2,033 Conduct Attack Operations Operational Concept Demonstration.</p> <p>(U) 1,650 Continue analysis of architectures with weapon system and BMC4I upgrades, incorporate model and threat scenario upgrades and perform engagement analyses for input to future year mission analysis.</p> <p>(U) 3,902 Conduct development of F-15E ATC/R prototype integrated with improved on/off-board sensor fusion.</p> <p>(U) \$7,585 Total</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <p>(U) 2,298 Conduct Attack Operations Operational Concept Demonstration.</p> <p>(U) 1,755 Continue analysis of updated architectures with weapon system and BMC4I upgrades, incorporate obscured targets and weapon effects and perform engagement analyses for input to future year mission analysis.</p> <p>(U) 3,881 Conduct demonstration of F-15E ATC/R prototype with sensor fusion.</p> <p>(U) \$7,934 Total</p>											

Project 4479

Page 12 of 15 Pages

Exhibit R-2 (PE 0208060F)

1456

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0208060F Theater Missile Defense

4479

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget	8,725	8,020	8,094	TBD
(U) Appropriated Value	8,911	8,020		TBD
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-186	-271		
b. SBIR		-164		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-160	
(U) Current Budget Submit/FY 1999 President's Budget	8,725	7,585	7,934	TBD

## (U) Change Summary Explanation:

Funding: Change in FY97 due to payment of Air Force Bills. Changes in FY98 and FY99 were due to deletion of Link-16 integration in the F-15E.

Schedule: The deletion of Link-16 integration in the F-15E from this PE will delay implementation of a datalink capability in air to ground aircraft until the planned integration under the F-15E program (after FY00).

Technical: N/A

## (U) D. Schedule Profile:

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) ATC/R Demos (F-15E/Surveillance)			X	X			X		X
(U) Ops Concept Demonstrations			X				X		

Project 4479

Page 13 of 15 Pages

Exhibit R-2 (PE 0208060F)

1457

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				
7 - Operational System Development	0208060F Theater Missile Defense				4479
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
	FY 1997	FY 1998	FY 1999		
(U) Joint STARS ATC/R Demonstration/Improvements	1,190	0	0		
(U) Operational Concept Demonstration	3,367	2,033	2,298		
(U) Sensor Prototypes and Attack Ops Demonstrations/Sims	1,528	1,650	1,755		
(U) F-15E ATC/R Demonstrations	2,640	3,902	3,881		
(U) Total	8,725	7,585	7,934		
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
<b>Performing Organizations:</b>					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
					FY 1997
					Budget FY 1997
					Budget FY 1998
					Budget FY 1999
					Budget to Complete
					Total Program
<b>Product Development Organizations</b>					
Boeing	CPFF	Aug 94	N/A	N/A	772
Boeing	CPFF	30 May 86	N/A	N/A	890
Geometric	CPFF	Mar 95	N/A	N/A	65
Hughes-FD	CPFF	Mar 95	N/A	N/A	1,234
Norden	CPFF	Sep 94	N/A	N/A	540
Veda	CPFF	Feb 95	N/A	N/A	200
Lincoln Lab	MIPR	Mar 95	N/A	N/A	100
Sverdrup	CPFF	Mar 95	N/A	N/A	565
HSC/AL	MIPR	Aug 94	N/A	N/A	2,470
Sandia Nat Labs	MIPR	Mar 95	N/A	N/A	8,586
Lockheed Martin	MIPR	TBD	N/A	N/A	0
Optimetrics	CPFF	TBD	N/A	N/A	0
					772
					890
					65
					6,255
					540
					200
					100
					565
					3,455
					8,826
					4,092
					150
Project 4479					
Exhibit R-3 (PE 0208060F)				Page 14 of 15 Pages	

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT	4479		
BUDGET ACTIVITY		PE NUMBER AND TITLE								
7 - Operational System Development		0208060F Theater Missile Defense								
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
ESC/JTF	MIPR	TBD	N/A	N/A	0	600	0	0	0	600
Grumman	MIPR	Sep 96	N/A	N/A	0	350	0	0	0	350
ACC/XPSAS	MIPR	TBD	N/A	N/A	0	0	500	505	Continuing	1,005
WL/AAZ	MIPR	TBD	N/A	N/A	0	96	0	0	0	96
WL/AAR	MIPR	TBD	N/A	N/A	0	0	650	675	Continuing	1,325
AL/CFHI	MIPR	TBD	N/A	N/A	0	0	365	585	Continuing	950
WL/AAJT	MIPR	TBD	N/A	N/A	0	0	0	112	Continuing	112
<u>Support and Management Organizations</u>										
FFRDC			N/A	N/A	757	648	210	230	Continuing	1,845
Non-FFRDC			N/A	N/A	471	355	160	192	Continuing	1,178
HQ ASC			N/A	N/A	561	960	948	559	Continuing	3,028
<u>Test and Evaluation Organizations</u>										
28 Test/TOT	MIPR	Mar 95	N/A	N/A	17	1,316	950	1,040	Continuing	3,323
AFSAA	MIPR	Feb 95	N/A	N/A	350	0	0	0	0	350
Eglin-46 Tst Wg		May 94	N/A	N/A	5,296	1,000	50	700	Continuing	7,046
<u>Government Furnished Equipment</u>										
None										
Subtotal Product Development					15,422	4,446	5,267	5,213	Continuing	30,348
Subtotal Support and Management					1,789	1,963	1,318	981	Continuing	6,051
Subtotal Test and Evaluation					5,663	2,316	1,000	1,740	Continuing	10,719
Total Project					22,874	8,725	7,585	7,934	Continuing	47,118
Project 4479										
Exhibit R-3 (PE 0208060F)										

Project 4479

Page 15 of 15 Pages

Exhibit R-3 (PE 0208060F)

1459

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0302015F

PE TITLE: E-4B National Airborne Operations Center (NAOC)

UNCLASSIFIED

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE	PROJECT
7 - Operational System Development		0302015F E-4B National Airborne Operations Center (NAOC)										February 1998	4777
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)													
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost			
4777 E-4B Aircraft Modernization		0	0	4,233	17,570	36,622	25,113	4,260	0	87,798			
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0			
<p><b>Note:</b> Project 4777 is an FY 99 new start.</p> <p>(U) <b>A. Mission Description and Budget Item Justification</b>            (U) This program encompasses essential infrastructure, mission equipment and interior upgrades to the E-4 Aircraft which is the airframe of the National Airborne Operational Center (NAOC). The NAOC supports the National Command Authority (NCA) and Joint Chiefs of Staff with a worldwide, survivable and enduring node of the National Military Command System (NMCS) for the exercise of their national security responsibilities throughout the full spectrum of conflict. These modifications will improve mission efficiency and effectiveness by upgrading aircraft systems and interior configurations to allow a better interface with current off-aircraft communications systems. Interior upgrades will reduce noise and increase workspace efficiency. This program is in budget activity 7 because the program is developing modifications for current operations systems.</p> <p>(U) <b>Acquisition Strategy:</b>            Boeing OEM owns rights to all drawings on this aircraft under an existing Engineering Services Time and Materials contract and therefore will build the A &amp; B specifications (When restricted technologies are involved, foreign competition is not allowed). All other contracts will be Cost Plus Award Fee (CPAF) types, Cost Plus Incentive Fee (CPIF), or a hybrid of the two types of contracts.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <p style="text-align: right;">- (U) \$0      Total</p> <p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <p style="text-align: right;">- (U) \$0      Total</p>													

Project 4777

Page 1 of 5 Pages

Exhibit R-2 (PE 0302015F)

1461

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0302015F E-4B National Airborne Operations  
Center (NAOC)

7 - Operational System Development

PROJECT  
4777

## (U) FY 1999 (\$ in Thousands):

- (U) \$ 2,091 Trade Studies(e.g., E-4B modification and GANS/GATM Analysis)
- (U) \$ 2,092 Begin Developing A & B Specs
- (U) \$ 50 Mission Support
- (U) \$4,233 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget	0	0	0	0
(U) Appropriated Value				
(U) Adjustments to Appropriated Value				

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/ FY 1999 President's Budget

0	0	4,233	0
0	0	4,233	87,798

(U) Change Summary Explanation:

Funding: FY 99 and out is included in the budget as a new start activity

Schedule: None

Technical: None

Project 4777

Page 2 of 5 Pages

Exhibit R-2 (PE 0302015F)

1462

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0302015F E-4B National Airborne Operations

4777

Center (NAOC)

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
(U) ) E-4B Major Modification, PE 0302015F	13,379	13,987	26,938	35,290	14,625	35,042	0	0	28,125	167,386

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999
1	2	3	2	3	2
					3

(U) Begin Trade Studies

(U) Begin Development of A &amp; B Specs

X

4

X

Project 4777

Page 3 of 5 Pages

Exhibit R-2 (PE 0302015F)

1463

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0302015F E-4B National Airborne Operations

4777

Center (NAOC)

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Engineering (Recurring and Non-recurring)	0	0	2,041
(U) Primary Hardware (Kits, Initial Spares, etc.)	0	0	2,042
(U) Mission Support	0	0	150
(U) Total	0	0	4,233

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	-----------------------	------------------

Product Development Organizations

Boeing	CPAF/CPIF	TBD	TBD	TBD	0	0	0	3,733	74,625	78,358
--------	-----------	-----	-----	-----	---	---	---	-------	--------	--------

Support and Management Organizations

TRW/ANSER	T & M	TBD	TBD	TBD	0	0	0	350	8,220	8,570
Misc.	Misc.	TBD	TBD	TBD	0	0	0	150	680	830

Test and Evaluation Organizations

NSA/FAA	MIPR	TBD	TBD	TBD	0	0	0	0	40	40
---------	------	-----	-----	-----	---	---	---	---	----	----

Government Furnished Property: None

Project 4777

Page 4 of 5 Pages

Exhibit R-3 (PE 0302015F)

1464

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0302015F E-4B National Airborne Operations  
Center (NAOC)

4777

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Property</u>									
		None							
<u>Support and Management Property</u>									
		None							
<u>Test and Evaluation Property</u>									
		None							
Subtotal Product Development				0	0	0	3,733	74,625	78,358
Subtotal Support and Management				0	0	0	500	8,900	9,400
Subtotal Test and Evaluation				0	0	0	0	40	40
Total Project				0	0	0	4,233	83,565	87,798

Project 4777

Page 5 of 5 Pages

Exhibit R-3 (PE 0302015F)

Project 4777

Page 5 of 5 Pages

Exhibit R-3 (PE 0302015F)

1465

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0303110F

UNCLASSIFIED

PE TITLE: Def Satellite Comm Sys (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303110F Def Satellite Comm Sys (Space)								2638	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2638	Defense Satellite Communications Sys	30,098	9,961	15,641	9,149	8,756	2,963	2,220	5,200	633,415	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) A. Mission Description and Budget Item Justification

(U) Defense Satellite Communications System (DSCS) is the backbone of the Government's satellite communications system, providing both secure voice and high data rate transmissions in the SHF frequency band. DSCS provides unique and vital national security communications for global command and control, crisis management, intelligence and early warning data relay, treaty monitoring and surveillance information, and diplomatic traffic. The communications relayed through DSCS support the National Command Authorities, Global Command and Control System, Diplomatic Telecommunications Service, White House Communications Agency, the Navy, the Air Force Satellite Control Network, and ground mobile forces of all services.

(U) Based on the DoD Space Architect's recommendation, the Service Life Enhancement Program (SLEP) will include additional modifications that increase the last four satellites' capacity to tactical users by more than 200%.

(U) This program is in Budget Activity 7, Operational System Development, because DSCS is a production system consisting of a fully operational satellite constellation and replenishment satellites awaiting launch.

(U) Acquisition Strategy:  
All satellites have been acquired and four satellites remain to launch. Enhancements to satellites not launched will be accomplished through sole source contract awards.

(U) FY 1997 (\$ in Thousands):

- (U) \$2,898 Continued DSCS mission support activities
- Supported program office operations
- Conducted programmatic tradeoffs and analyses
- Paid performance incentives for development satellites that are still on orbit and operational

Project 2638

Page 1 of 6 Pages

Exhibit R-2 (PE 0303110F)

1467

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
<b>7 - Operational System Development</b>			<b>February 1998</b>	<b>2638</b>
- (U) \$27,200	Continued SLEP modification			
	- Completed system Critical Design Review (CDR)			
	- Fabricated and assembled components for first article insertion			
	- Continued to develop Low Noise Amplifier (LNA) upgrade to enhance performance and increase capacity for tactical users			
	- Continued to develop satellite bandwidth modifications to increase capacity level of less capable DSCS satellites to that of satellites B8 - B14			
	- Continued to develop modification kits for variable gain step attenuator and channel 5 switch to gimbaled dish antenna (GDA)			
- (U) \$30,098	Total			
(U) FY 1998 (\$ in Thousands):				
- (U) \$3,311	Continue DSCS mission support activities			
	- Support program office operations			
	- Conduct programmatic tradeoffs and analyses			
	- Pay performance incentives for development satellites that are still on orbit and operational			
- (U) \$5,000	Continue SLEP modification			
	- Conduct final assembly of first article			
	- Conduct SLEP rework verification test			
	- Continue LNA upgrade development to enhance performance and increase capacity for tactical users			
- (U) \$1,650	- Continue to develop satellite bandwidth modifications to increase capacity level of less capable DSCS satellites to that of satellites B8 - B14			
- (U) \$9,961	- Begin integration development to transition last two satellites to Evolved Expendable Launch Vehicles (EELVs)			
	Total			
(U) FY 1999 (\$ in Thousands):				
- (U) \$3,591	Continue DSCS mission support activities			
	- Support program office operations			
	- Conduct programmatic tradeoffs and analyses			
	- Pay performance incentives for development satellites that are still on orbit and operational			
- (U) \$12,050	- Investigate and develop DSCS III performance enhancements			
- (U) \$15,641	- Continue integration development to transition last two satellites to EELVs			
	Total			

Project 2638

Page 2 of 6 Pages

Exhibit R-2 (PE 0303110F)

1468

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303110F Def Satellite Comm Sys (Space)

2638

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Program
(U) Previous President's Budget (FY 1998 PB)	27,279	10,547	17,589	634,014
(U) Appropriated Value	28,127	10,547		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-589	-345		
b. SBIR	-259	-241		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	2,869			
e. Rescissions	-50			
(U) Adjustments to Budget Years Since FY 1998 PB			-1,948	
(U) Current Budget Submit/FY 1999 President's Budget	30,098	9,961	15,641	633,415

## (U) Change Summary Explanation:

Funding: \$2,869 FY 1997 BTR from PE 0305144F completes the development of the Service Life Enhancement Kit for the first modified DSCS satellite.

Schedule: None

Technical: None

Project 2638

Page 3 of 6 Pages

Exhibit R-2 (PE 0303110F)

1469

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303110F Def Satellite Comm Sys (Space)								2638	
(U) C. Other Program Funding Summary (\$ in Thousands)											
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	
(U)	Missile Procurement, P-27	28,627*	73,980	28,969	31,283	23,412	27,714	23,646	73,500	1,906,531	
* Includes \$13.5 million advanced procurement for SLEP.											
(U) D. Schedule Profile											
		FY 1997			FY 1998		FY 1999				
		1	2	3	4	1	2	3	4	X	
(U)	Launch DSCS/IABS 7 (Jul 99)										
(U)	Launch DSCS/IABS 8 (May 00)										
(U)	Launch DSCS/IABS 9 (May 02)										
(U)	Launch DSCS/IABS 10 (May 03)										
(U)	SLEP Modification Program (Mar 96 - Aug 00)										
(U)	SLEP CDR (Mar 97)										
(U)	EELV Integration (May 98 - Jan 00)										

Project 2638

Page 4 of 6 Pages

Exhibit R-2 (PE 0303110F)

1470

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303110F Def Satellite Comm Sys (Space)

2638

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Basic Program Activities	2,898	3,311	3,591
(U) SLEP	27,200	5,000	0
(U) BELV	0	1,650	12,050
(U) Total	30,098	9,961	15,641

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997*	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Lockheed Martin	FFP/AF	Oct 84	437,500	437,500	404,637	28,798	6,697	1,591	4,100	445,823
Miscellaneous	CPAF	Various	N/A	N/A	124,978	0	1,650	12,050	800	139,478
<u>Support and Management Organizations</u>										
Aerospace Corp	PO	Various	N/A	N/A	12,900	0	0	0	0	12,900
Miscellaneous	Various	Various	N/A	N/A	10,000	1,300	1,614	2,000	20,300	35,214
<u>Test and Evaluation Organizations</u>										
None										

\* Tracked back to FY86. All other prior year funds included in the Miscellaneous line for Product Development Organizations.

Project 2638

Page 5 of 6 Pages

Exhibit R-3 (PE 0303110F)

1471

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY				PE NUMBER AND TITLE				0303110F Def Satellite Comm Sys (Space)				2638
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)												
Government Furnished Property: None												
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program			
<u>Product Development Property</u>												
N/A												
<u>Support and Management Property</u>												
N/A												
<u>Test and Evaluation Property</u>												
N/A												
Subtotal Product Development				529,615	28,798	8,347	13,641	4,900	585,301			
Subtotal Support and Management				22,900	1,300	1,614	2,000	20,300	48,114			
Subtotal Test and Evaluation												
Total Project				552,515	30,098	9,961	15,641	25,200	633,415			

Project 2638

Page 6 of 6 Pages

Exhibit R-3 (PE 0303110F)

Project 2638

Page 6 of 6 Pages

Exhibit R-3 (PE 0303110F)

1472

UNCLASSIFIED

PE NUMBER: 0303131F

UNCLASSIFIED

PE TITLE: Minimum Essential Emergency Communications Network (MEECN)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY										PE NUMBER AND TITLE	
7 - Operational System Development										0303131F Minimum Essential Emergency Communications Network (MEECN)	
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
Total Program Element (PE) Cost	23,307	32,399	39,230	44,743	13,332	1,756	1,213	Continuing	Continuing		
2832 VLF/LF System Improvements	9,668	13,868	23,603	20,505	1,396	1,488	1,213	Continuing	Continuing		
4521 DIRECT	13,639	18,531	3,379	1,205	271	268	0	0	37,793		
4610 MEECN EHF	0	0	12,248	23,033	11,665	0	0	0	46,946		
Quantity of RDT&E Articles	0	0	7* 2/0**	7* 4/0**	0/4**	0	0	0	0		

(U) NOTES:

- Project 4521, DIRECT, was established to consolidate efforts related to DIRECT being or planned for accomplishment in PE 0603851F, ICBM Modernization Dem/Val (BPAC 1024, ICBM C2 Applications), PE 0604851F, ICBM Modernization EMD (BPAC 13C4, Strategic C4 Program), PE 0101213F, Minuteman Squadrons, and PE 0303131F, MEECN (BPAC 2832, VLF/LF Systems Improvements).
- \*MMRT units \*\*ILES units/trainers

(U) A. Mission Description and Budget Item Justification

(U) MEECN systems provide assured communications connectivity between the National Command Authorities (NCA) and the strategic deterrent forces. Past MEECN projects included the High Power Transmit Set (HPTS), Ground Wave Emergency Network (GWEN), and Dual Frequency MEECN Receiver (DFMR). Current projects include the Modified Miniature Receive Terminal (MMRT) with High Data Rate (HIDAR) mode, the Defense Improved Emergency Message Automated Transmission System (IEMATS) Replacement Command and Control Terminals (DIRECT), and the ICBM LCC Extremely High Frequency (EHF) System (ILES) component of MEECN EHF.

(U) This program is in Budget Activity 7 - Operational System Development, Research Category 6.6, because it supports work on currently operating systems.

(U) Acquisition Strategy:

(U) Modified Miniature Receive Terminal (MMRT) Program. Program to satisfy both the Air Force and Navy requirements via a joint effort with the Air Force Electronics Systems Center, Hanscom AFB, MA as the lead agency. Modifies existing Miniature Receive Terminals (MRTs). EMD contract awarded in FY96 for three platforms: the E-4B (National Airborne Operations Center (NAOC)); E-6B (Take Charge and Move Out (TACAMO)); and an option for the ICBM Launch Control Centers (LCCs). Limited ICBM LCC EMD option was exercised in 2QtrFY97 with balance of EMD to be restarted in FY99. Production contract award planned for FY00/01. Complete deployment of Air Force and Navy MMRT units by 2004.

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE																																																							
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998																																																							
<b>7 - Operational System Development</b>	<b>0303131F Minimum Essential Emergency Communications Network (MEECN)</b>																																																								
<p>(U) DIRECT Program. A contract for EMD was awarded on 12 Jul 96. Anticipate issuing a sole source contract for production in 2QtrFY98 for eight units.</p> <p>(U) ILES Program. A competitive cost plus award fee contract for EMD with firm fixed price options for production is expected. Anticipate EMD contract award in 1Qtr FY99.</p>																																																									
<p>(U) <b>B. Program Change Summary (\$ in Thousands)</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 1998 PB)</td> <td>20,842</td> <td>34,409</td> <td>29,019</td> <td>Continuing</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>21,902</td> <td>34,409</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    a. Cong Reductions</td> <td>-525</td> <td>-1,236</td> <td></td> <td></td> </tr> <tr> <td>    b. SBIR</td> <td>-535</td> <td>-774</td> <td></td> <td></td> </tr> <tr> <td>    c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    d. Below Threshold Reprogramming</td> <td>2,500</td> <td></td> <td>10,211</td> <td></td> </tr> <tr> <td>    e. Recissions</td> <td>-35</td> <td></td> <td>39,230</td> <td>Continuing</td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 1998 PB</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Current Budget Submit/FY 1999 President's Budget</td> <td>23,307</td> <td>32,399</td> <td></td> <td></td> </tr> </tbody> </table> <p>(U) Change Summary Explanation: \$224K in FY98 is pending reprogramming to fund other priorities. FY99-03 funding adjusted to provide for acceleration of the ICBM LCC MMRT effort and to provide for MMRT airborne testing. For more details, see individual projects.</p>				FY 1997	FY 1998	FY 1999	Total Cost	(U) Previous President's Budget (FY 1998 PB)	20,842	34,409	29,019	Continuing	(U) Appropriated Value	21,902	34,409			(U) Adjustments to Appropriated Value					a. Cong Reductions	-525	-1,236			b. SBIR	-535	-774			c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogramming	2,500		10,211		e. Recissions	-35		39,230	Continuing	(U) Adjustments to Budget Years Since FY 1998 PB					(U) Current Budget Submit/FY 1999 President's Budget	23,307	32,399		
	FY 1997	FY 1998	FY 1999	Total Cost																																																					
(U) Previous President's Budget (FY 1998 PB)	20,842	34,409	29,019	Continuing																																																					
(U) Appropriated Value	21,902	34,409																																																							
(U) Adjustments to Appropriated Value																																																									
a. Cong Reductions	-525	-1,236																																																							
b. SBIR	-535	-774																																																							
c. Omnibus or Other Above Threshold Reprogram																																																									
d. Below Threshold Reprogramming	2,500		10,211																																																						
e. Recissions	-35		39,230	Continuing																																																					
(U) Adjustments to Budget Years Since FY 1998 PB																																																									
(U) Current Budget Submit/FY 1999 President's Budget	23,307	32,399																																																							
<p>(U) <b>C. Other Program Funding Summary (\$ in Thousands):</b></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To Compl</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)</td> <td>11,683</td> <td>11,683</td> <td>1,545</td> <td>1,094</td> <td>35,226</td> <td>22,046</td> <td>10,482</td> <td>0</td> <td>82,108</td> </tr> </tbody> </table> <p><b>Related PEs:</b> PE 0603851F, ICBM Dem/Val, PE 0604851F, ICBM EMD (both in FY97 only), PE 0302015F, E-4, BA-05, P-057, and PE 0101213F, Minuteman Squadrons (MMIII Modifications), BA-07, P-013</p>				FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)	11,683	11,683	1,545	1,094	35,226	22,046	10,482	0	82,108																																			
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																																																
(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)	11,683	11,683	1,545	1,094	35,226	22,046	10,482	0	82,108																																																
<p>(U) <b>D. Schedule Profile:</b> See individual projects.</p>																																																									

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303131F Minimum Essential Emergency  
Communications Network (MEECN)

2832

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2832 VLF/LF System Improvements		9,668	13,868	23,603	20,505	1,396	1,488	1,213	Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

(U) The Modified Miniature Receive Terminal (MMRT) Program will modify existing Miniature Receive Terminals (MRTs) and provide High Data Rate (HIDAR) capability for installation in three platforms: the E-4B, National Airborne Operations Center (NAOC); the E-6B, Take Charge and Move Out (TACAMO); and ICBM Launch Control Centers (LCCs). This program will make VLF/LF receivers fully interoperable in all three platforms. MRT is a Very Low Frequency/Low Frequency (VLF/LF) receiver already designed, developed, and installed in the B-1 and B-52 bombers.

(U) HIDAR is a Joint Staff-directed effort to provide a fast and interoperable MEECN mode. This program will develop and test modifications required to retrofit current MEECN platforms with the HIDAR software and firmware.

(U) High Power Transmit Set (HPTS) was a joint Air Force and Navy Program to provide the E-4 and the E-6 aircraft with an improved and supportable VLF transmission capability. HPTS completed development phase in 2Qtr FY95. Procurement for the E-4 is under Departmental review.

(U) FY 1997 (\$ in Thousands):

-	(U)	\$8,783	Continued common MMRT and airborne integration development
-	(U)	\$285	Continuing Evaluation Program (CEP)
-	(U)	\$600	Set aside for BTR to 0305165F
-	(U)	\$9,668	Total

(U) FY 1998 (\$ in Thousands):

-	(U)	\$12,500	Continue common MMRT and airborne integration development
-	(U)	\$204	Secondary VLF/LF Link study/analysis
-	(U)	\$1,068	Continuing Evaluation Program (CEP)
-	(U)	\$96	Pending reprogramming to fund higher priorities
-	(U)	\$13,868	Total

Project 2832

Page 3 of 16 Pages

Exhibit R-2 (PE 0303131F)

1475

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0303131F Minimum Essential Emergency  
Communications Network (MEECN)PROJECT  
2832

## 7 - Operational System Development

## (U) FY 1999 (\$ in Thousands):

- (U) \$9,936 Continue common MMRT and airborne integration development  
 - (U) \$2,400 MMRT Testing  
 - (U) \$9,900 Re-start MMRT ICBM LCCs integration development  
 - (U) \$1,367 Continuing Evaluation Program (CEP)  
 - (U) \$23,603 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)				
(U) Appropriated Value	9,668	14,686	11,778	Continuing
(U) Adjustments to Appropriated Value	10,489	14,686		
a. Cong Reductions	-286	-487		
b. SBIR	-535	-331		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Recissions				
(U) Adjustments to Budget Years Since FY 1998 PB			11,825	
(U) Current Budget Submit/FY 1999 President's Budget	9,668	13,868	23,603	Continuing

## (U) Change Summary Explanation:

Funding: \$96K in FY98 is pending reprogramming to fund other priorities. FY99-03 funding adjusted to provide for acceleration of the ICBM LCC effort and to provide for MMRT airborne testing.

Schedule: Air worthiness certification delayed by six months. ICBM LCCs integration has been accelerated by one year.

Technical: None.

Project 2832

Page 4 of 16 Pages

Exhibit R-2 (PE 0303131F)

1476

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

### BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

**0303131F Minimum Essential Emergency**

**PROJECT**

2832

(U) C. Other Program Funding Summary (\$ in Thousands):

**Related PEs:** PE 0603851F, ICBM Dem/Val, (FY97 only), PE 0302015F, E-4, BA-05, P-057, and PE 0101213F, Minuteman Squadrons (MMIII Modifications), BA-07, P-013.

**(U) D. Schedule Profile**

[illegible]

Project 2832

Page 5 of 16 Pages

Exhibit R-2 (PE 0303131F)

1477

**UNCLASSIFIED**



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
7 - Operational System Development		0303131F Minimum Essential Emergency Communications Network (MEECN)		February 1998	2832
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U)	Primary Hardware Development	7,141	5,712	11,990	
(U)	Software Development	311	1,019	2,351	
(U)	Systems Engineering	425	624	1718	
(U)	Development Test and Evaluation		1,100	2,996	
(U)	Contractor Engineering Support	379	451	673	
(U)	Government Engineering Support	425	2,962	1,244	
(U)	Travel	102	380	577	
(U)	Miscellaneous		456	687	
(U)	CEP	285	1,068	1,367	
(U)	Pending reprogramming to fund higher priorities	600	96	0	
(U)	Total	9,668	13,868	23,603	
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
Performing Organizations:					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997 Budget FY 1997 FY 1998 FY 1999 Budget to Complete Total Program
Product Development Organizations					
Rockwell	CPAF	Aug 92	13,500	13,500	0 0 13,500
Rockwell	CPAF	Jul 96	n/a	n/a	8,256 16,732 Continuing 77,597
Project 2832					
Page 6 of 16 Pages				Exhibit R-3 (PE 0303131F)	

1478

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998			
BUDGET ACTIVITY					PROJECT				
7 - Operational System Development					2832				
PE NUMBER AND TITLE					0303131F Minimum Essential Emergency Communications Network (MEECN)				
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget to Complete FY 1999	Total Program	
Support and Management Organizations									
TEMS	LOE	Annual			910	527	1,798	Continuing	
SPAWAR	MIPR	Annual				285	1,068	Continuing	
SysCen								Continuing	
NavAir Warfare Center IPT	MIPR	Annual					1,000	Continuing	
Reprogramming					0	600	96		
Test and Evaluation Organizations									
NavAir Warfare Center	MIPR	Annual			390	0	1,100	Continuing	
Government Furnished Property: None.									
Subtotal Product Development									
Subtotal Support and Management					Total Prior to FY 1997	Budget FY 1997	FY 1998	Budget to Complete FY 1999	Total Program
Subtotal Test and Evaluation					53,649	8,256	8,806	16,732	Continuing
					910	1,412	3,962	3,875	Continuing
					390	0	1,100	2,996	Continuing
Total Project					54,949	9,668	13,868	23,603	Continuing

Project 2832

Page 7 of 16 Pages

Exhibit R-3 (PE 0303131F)

Project 2832

Page 7 of 16 Pages

Exhibit R-3 (PE 0303131F)

1479

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0303131F Minimum Essential Emergency  
Communications Network (MEECN)PROJECT  
4521

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4521 DIRECT		13,639	18,531	3,379	1,205	271	268	0	0	37,793

NOTE: This project was established in Jan 96 to consolidate efforts related to DIRECT currently being or planned for accomplishment in PE 0603851F, ICBM Modernization Dem/Val (BPAC 1024, ICBM C2 Applications), PE 0604851F, ICBM Modernization EMD (BPAC 13C4, Strategic C4 Program), PE 0101213F, Minuteman Squadrons, and 0303131F, MEECN (BPAC 2832, VLF/LF System Improvements).

(U) A. Mission Description and Budget Item Justification

(U) The Defense IEMATS Replacement Command and Control Terminals (DIRECT), which is the Improved Emergency Message Automated Transmission System (IEMATS) replacement program, is a Strategic Nuclear Command and Control (C2) system directly supporting the Chairman of the Joint Chiefs of Staff (CJCS) and the National Command Authorities (NCA). DIRECT will provide for all current IEMATS requirements, including the build, release, and transmission of Emergency Action Messages (EAM) to allow the CJCS and warfighters to remain responsive to NCA directives. This program will procure system hardware for seven unified command centers and a software maintenance facility. DIRECT will be compatible with the Defense Message System (DMS) when it supplants the Automated Digital Network (AUTODIN) and will interface with all other EAM distribution communications systems. The Director, Joint Staff, established an urgent and compelling need to field an IEMATS replacement system no later than second quarter FY99 to insure the orderly closure of AUTODIN Switching Centers (ASC).

(U) FY 1997 (\$ in Thousands):

- (U) \$11,109 DIRECT Engineering and Manufacturing Development  
 - (U) \$2,000 Automated Codebook Module (ACM)  
 - (U) \$130 Continuing Evaluation Program (CEP)  
 - (U) \$400 Set aside for BTR to 0305165F  
 - (U) \$13,639 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$18,110 Continue DIRECT Engineering and Manufacturing Development  
 - (U) \$0 Continue Automated Codebook Module (ACM)  
 - (U) \$293 Continuing Evaluation Program (CEP)  
 - (U) \$128 Pending reprogramming to fund higher priorities  
 - (U) \$18,531 Total

Project 4521

Page 8 of 16 Pages

Exhibit R-2 (PE 0303131F)

1480

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4521

## 7 - Operational System Development

0303131F Minimum Essential Emergency  
Communications Network (MEECN)

## (U) FY 1999 (\$ in Thousands):

- (U) \$3,110 Continue DIRECT Engineering and Manufacturing Development  
 - (U) \$0 Continue Automated Codebook Module (ACM)  
 - (U) \$269 Continuing Evaluation Program (CEP)  
 - (U) \$3,379 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	11,174	19,723	4,747	37,235
(U) Appropriated Value	11,413	19,723		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-239	-749		
b. SBIR		-443		
c. Omnibus or Other Above Threshold Reprogram	2,500			
d. Below Threshold Reprogramming	-35			
e. Recissions			-1,368	
(U) Adjustments to Budget Years Since FY 1998 PB			3,379	
(U) Current Budget Submit/FY 1999 President's Budget	13,639	18,531		37,793

## (U) Change Summary Explanation:

Funding: \$128K in FY98 is pending reprogramming to fund higher priorities. FY99 funding reduced to fund other AF and DoD priorities. Automated Codebook Module (ACM) deferred.

Schedule: Initial Operational Capability (IOC) not later than (NLT) 2QrFY99 necessary to eliminate dependence on AUTODIN Switching Centers (ASCs) scheduled for CY99 closure. FY98 Congressional add enables initial DIRECT fielding to occur in FY99.

Technical: None.

Project 4521

Page 9 of 16 Pages

Exhibit R-2 (PE 0303131F)

1481

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0303131F Minimum Essential Emergency Communications Network (MEECN)	4521	
(U) C. <u>Other Program Funding Summary (\$ in Thousands):</u>			
		FY 1997	FY 1998
(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)		11,715	1,545
		1,094	
		FY 1999	FY 2000
		FY 2001	FY 2002
		FY 2003	
		To	Total
		Compl	Cost
		0	14,705
(U) D. <u>Schedule Profile</u>			
		FY 1997	FY 1998
		FY 1999	FY 2000
		FY 2001	FY 2002
		FY 2003	
(U) Development Test and Evaluation		1	2
(U) CDR		3	3
(U) Operational Test and Evaluation		X*	X
(U) Procurement		X*	X*
(U) Required DIRECT IOC		X*	X*
*Start/Complete			

Project 4521

Page 10 of 16 Pages

Exhibit R-2 (PE 0303131F)

1482

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303131F Minimum Essential Emergency  
Communications Network (MEECN)

4521

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Primary Hardware Development	2,730	3,699	588
(U) Software Development	4,003	7,554	1,312
(U) Systems Engineering	1,254	2,391	416
(U) Technical Data	84	161	28
(U) Automated Codebook Module	2,000	0	0
(U) Development Test and Engineering	120	230	40
(U) Government Engineering Support	2,001	2,379	430
(U) Program Management Support	808	1,541	268
(U) Travel	109	155	28
(U) CEP	130	293	269
(U) Pending reprogramming to fund higher priorities	400	128	0
(U) Total	13,639	18,531	3,379

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997*	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
GTE	CPAF	Jul 96	23,879	23,879	0	8,601	13,805	2,344	1,114	25,864
National Security Agency (NSA)	MIPR	Annually	5,000	5,000	500	2,000	0	0	0	2,500

Project 4521

Page 11 of 16 Pages

Exhibit R-3 (PE 0303131F)

1483

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
7 - Operational System Development										0303131F Minimum Essential Emergency Communications Network (MEECN)		
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997*	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
<u>Support and Management Organizations</u>												
MITRE	LOE	Annual	n/a	8,315	0	2,201	3,379	430	630	6,640		
JHU-APL	LOE	Annual	n/a			130	293	269		692		
Program Office	Various	Annual	n/a			187	696	296		1,179		
Reprogramming						400	128			528		
<u>Test and Evaluation Organizations</u>												
Various	Various		n/a	406	0	120	230	40	0	390		
<b>Government Furnished Property: None</b>												
<u>Total</u>												
					Total Prior to FY 1997*	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program		
Subtotal Product Development					500	10,601	13,805	2,344	1,114	28,364		
Subtotal Support and Management						2,918	4,496	995	630	9,039		
Subtotal Test and Evaluation						120	230	40		390		
Total Project					500	13,639	18,531	3,379	1,744	37,793		
* Excludes prior year funding in VLF/LF System Improvements (BPAC 2832, this PE)												

Project 4521

Page 12 of 16 Pages

Exhibit R-3 (PE 0303131F)

Project 4521

Page 12 of 16 Pages

Exhibit R-3 (PE 0303131F)

1484

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303131F Minimum Essential Emergency

4610

Communications Network (MEECN)

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4610 MEECN EHF	0	0	12,248	23,033	11,665	0	0	0	46,946

(U) A. Mission Description and Budget Item Justification

(U) This MEECN project will provide reliable, secure, and survivable communications in the Extremely High Frequency (EHF) band. Specifically, this effort is currently focused on replacing the satellite-based, ground communication links with Minuteman ICBM forces. It supplants the ICBM Super High Frequency (SHF) Satellite Terminal (ISST) receipt, providing force direction/execution, and the Ultra High Frequency (UHF) report-back links. ISST relies upon the Single Channel Transponder (SCT) package aboard the Defense Satellite Communications System (DSCS). The SCT will not be flown on the DSCS after 2003. Extending the use of SCT aboard DSCS is not practical. The UHF links depend upon the Air Force Satellite Communications (AFSATCOM) packages hosted aboard the Fleet Satellite Communications (FLTSATCOM) satellites. FLTSATCOM satellites are past their life expectancy. This integrated EHF system will be called the ICBM Launch Control Center (LCC) Extremely High Frequency (EHF) System (ILES). ILES is required to meet redundancy standards established by national security directives.

## (U) FY 1997 (\$ in Thousands):

- (U) \$0 Total - Program starts in FY99

## (U) FY 1998 (\$ in Thousands):

- (U) \$0 Total - Program starts in FY99

## (U) FY 1999 (\$ in Thousands):

- (U) \$10,196 Engineering and manufacturing development  
 - (U) \$252 Development Test and Evaluation  
 - (U) \$1,800 Program Management Support  
 - (U) \$12,248 Total

Project 4610

Page 13 of 16 Pages

Exhibit R-2 (PE 0303131F)

1485

UNCLASSIFIED



RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998																																																																																																						
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																																																																																							
7 - Operational System Development	0303131F Minimum Essential Emergency Communications Network (MEECN)	4610																																																																																																							
<p>(U) B. <u>Program Change Summary (\$ in Thousands)</u></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY 1998 PB)</td> <td>0</td> <td>0</td> <td>12,494</td> <td>48,089</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>0</td> <td>0</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    a. Cong Reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    b. SBIR</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    d. Below Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 1998 PB</td> <td></td> <td></td> <td>-246</td> <td></td> </tr> <tr> <td>(U) Current Budget Submit/FY 1999 President's Budget</td> <td>0</td> <td>0</td> <td>12,248</td> <td>46,946</td> </tr> </tbody> </table> <p>(U) Change Summary Explanation: This program initiated in response to DoD direction with RDT&amp;E commencing in FY99. FY99 funding reduced to fund other AF and DoD priorities.</p> <p>(U) C. <u>Other Program Funding Summary (\$ in Thousands):</u></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> <th>To Compl</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>35,226</td> <td>22,046</td> <td>10,482</td> <td>0</td> <td>70,487</td> </tr> </tbody> </table> <p><u>Related PEs:</u> None.</p> <p>(U) D. <u>Schedule Profile</u></p> <table border="1"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>FY 2000</th> <th>FY 2001</th> <th>FY 2002</th> <th>FY 2003</th> </tr> </thead> <tbody> <tr> <td>(U) Contract Award</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4</td> <td>1</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>4</td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Total Cost	(U) Previous President's Budget (FY 1998 PB)	0	0	12,494	48,089	(U) Appropriated Value	0	0			(U) Adjustments to Appropriated Value					a. Cong Reductions					b. SBIR					c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogramming					(U) Adjustments to Budget Years Since FY 1998 PB			-246		(U) Current Budget Submit/FY 1999 President's Budget	0	0	12,248	46,946		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)	0	0	0	0	35,226	22,046	10,482	0	70,487		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	(U) Contract Award	1	2	3	4	1	2	3						4	1	3							X	4
	FY 1997	FY 1998	FY 1999	Total Cost																																																																																																					
(U) Previous President's Budget (FY 1998 PB)	0	0	12,494	48,089																																																																																																					
(U) Appropriated Value	0	0																																																																																																							
(U) Adjustments to Appropriated Value																																																																																																									
a. Cong Reductions																																																																																																									
b. SBIR																																																																																																									
c. Omnibus or Other Above Threshold Reprogram																																																																																																									
d. Below Threshold Reprogramming																																																																																																									
(U) Adjustments to Budget Years Since FY 1998 PB			-246																																																																																																						
(U) Current Budget Submit/FY 1999 President's Budget	0	0	12,248	46,946																																																																																																					
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost																																																																																																
(U) APPN 16, Other Procurement - AF, BA-63, P-052, Electronics and Telecommunications Equip (MEECN, PE 0303131F)	0	0	0	0	35,226	22,046	10,482	0	70,487																																																																																																
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003																																																																																																		
(U) Contract Award	1	2	3	4	1	2	3																																																																																																		
					4	1	3																																																																																																		
						X	4																																																																																																		

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

7 - Operational System Development

0303131F Minimum Essential Emergency

4610

PE NUMBER AND TITLE

Communications Network (MEECN)

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Primary hardware development			5,630
(U) Software development			1,315
(U) Systems engineering			1,800
(U) Development Test and Evaluation			252
(U) Contractor engineering support			275
(U) Program management support			1,800
(U) Government engineering support			580
(U) Misc/Travel			596
(U) Total	0	0	12,248

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
TBD	TBD	2QrFY99			0	0	0	8,745	26,916	35,661
<u>Support and Management Organizations</u>										
TBD	TBD	TBD			0	0	0	3,251	10,006	13,257
<u>Test and Evaluation Organizations</u>										
TBD	TBD	TBD			0	0	0	252	776	1,028

Project 4610

Page 15 of 16 Pages

Exhibit R-3 (PE 0303131F)

1487

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0303131F Minimum Essential Emergency Communications Network (MEECN)		4610	
Government Furnished Property: None					
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total	
				Prior to FY 1997	Budget FY 1997
				FY 1998	FY 1999
				Budget to Complete	Total Program
Product Development Organizations					
TBD					
Support and Management Organizations					
TBD					
Test and Evaluation Organizations					
TBD					
Subtotal Product Development				FY 1998	FY 1999
Subtotal Support and Management				8,745	35,661
Subtotal Test and Evaluation				3,251	13,257
Total Project				252	1,028
				12,248	49,946

Project 4610

Page 16 of 16 Pages

Exhibit R-3 (PE 0303131F)

Project 4610

Page 16 of 16 Pages

Exhibit R-3 (PE 0303131F)

1488

UNCLASSIFIED

PE NUMBER: 0303140F

UNCLASSIFIED

PE TITLE: Information Systems Security Program

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY										PE NUMBER AND TITLE	
7 - Operational System Development										0303140F Information Systems Security Program	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		6,667	4,961	8,420	8,137	7,422	7,154	7,243	Continuing	TBD	
7820 Computer Security RDT&E: Firestarter		6,667	3,321	4,460	4,923	5,477	5,218	5,316	Continuing	TBD	
4585 Cryptologic 2000		0	1,640	1,999	1,262	0	0	0	0	4,901	
4579 Information Warfare		0	0	1,961	1,952	1,945	1,936	1,927	Continuing	TBD	
Quantity of RDT&E Articles		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

**(U) A. Mission Description and Budget Item Justification**

This program provides the capability to protect and defend USAF Command, Control, Communications, Computers, and Intelligence, Surveillance, and Reconnaissance (C4ISR) and Weapon Systems from IW attacks and recover from those attacks. Primarily, the project does research and development of information protection tools and transitions them to operational systems. It also provides the acquisition community and operational warfighters the ability to manage their own risks relative to mission, task, threat, and vulnerability information and to mitigate IW risks based on rank-ordered countermeasure recommendations. The program element consists of three complimentary projects.

The computer security project directs the R&D of Information Protection technology and tools to defend AF C4ISR systems, with emphasis on computer and network systems security, damage assessment and recovery, and multi-level systems security. This project focuses on protection and defense of the Air Force, Joint, National, and Defense Information Infrastructures. This R&D provides adequate access control, integrity, assured services and meets warfighter's requirements. The Cryptologic 2020 project comprises R&D for the Air Force Electronic Key Management System (AFEKMS). The AFEKMS, in concert with NSA's EKMS, provides a secure and flexible capability for the electronic generation, distribution, and management of key material, voice callwords, and Communications Security (COMSEC) publications for the F-22. AFEKMS replaces the existing physical distribution and management system providing COMSEC KEYS for USAF Information Protection. The Air Force unique AFEKMS software is required because the production software developed by NSA cannot provide the capabilities to distribute the system keys in the format needed by the F-22 Mission Support System. The Information Warfare project comprises R&D for Vulnerability Assessment/Risk Management (IW VA/RM) and Technology planning to build info protect into all AF C2, ISR, and weapons systems. This program is in budget activity 7, Operational System Development, because it addresses the development and transition of information security, protection and defensive capabilities and technologies to protect, detect, respond to, and defend against information attack by new and emerging IW threats.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE
BUDGET ACTIVITY			February 1998
7 - Operational System Development		PE NUMBER AND TITLE	
(U) B. <u>Program Change Summary (\$ in Thousands)</u>		0303140F Information Systems Security Program	
(U) Previous President's Budget (FY 1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	6,548	5,298	6,589
(U) Adjustments to Appropriated Value	6,900	5,298	
a. Cong Reductions	-182	-215	
b. SBIR	-170	-122	
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	+130		1,831
e. Rescissions	-11		8,420
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) Current Budget Submit/FY 1999 President's Budget	6,667	4,961	TBD
Total			
Cost			
TBD			
(U) Change Summary Explanation:			
Funding: FY99 funds added during 99 APOM for Information Warfare Vulnerability Assessment/Risk Management (VA/RM) Project.			
FY97 reprogramming of \$130,000 to initiate early VA/RM prototyping efforts.			
Schedule: N/A			
Technical: IW/VA/RM Project to build info protect into all C2, ISR, communications, and weapons systems.			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>			
(U) For research and development efforts pursued under Program Element (PE) 33140F there is complementary work being performed under PE 35167G which addresses the development of generic technology in the area of information security. Products from PE 33140F transition to other agencies through PE 64740F Computer Resources Management Technology Transition.			
(U) D. <u>Schedule Profile</u> See individual project schedules.			

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303140F Information Systems Security Program

7820

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
7820 Computer Security RDT&E: Firestarter	6,667	3,321	4,460	4,923	5,477	5,218	5,316	Continuing	TBD

**(U) A. Mission Description and Budget Item Justification**

This program directs the Research & Development (R&D) of Information Protect technology/tools to provide the capability to defend USAF Command, Control, Communications, Computer, and Intelligence (C4I) Systems from Information Warfare (IW) Cyber attacks and to recover from those attacks. As the USAF single manager for Information Protect (R&D), this program directs C4I system Information Protect R&D with emphasis in computer/network systems security, damage assessment and recovery, and multi-level security. With the advent of the information age, the battlefield commander's ability to fight and win becomes more dependent upon the availability, timeliness, and integrity of the information flow/processing capability available. The requirement for global presence and global power has demanded increasing reliance on these advanced information systems with global accessibility. The susceptibilities inherent in such reliance and accessibility has heightened the awareness that the National Information Infrastructure (NII) and the Defense Information Infrastructure (DII) must be protected against attack.

Emphasis is therefore placed on R&D areas that provide deterrence of attack through cyberspace surveillance, Tactical Indications & Warning (I&W), intrusion detection and characterization of attack. As adversaries may gain access to critical AF Force information system through a variety of means, including the Internet, other dial-connections, and DSNET, this technology will provide the capability of collecting, integrating, and displaying threat, vulnerability, and system data indicating an attack is about to take place and/or is taking place. Specifically this R&D supports Air Force requirements for Global Engagement by providing the technology that will protect the critical information infrastructure and systems necessary for the Air Force to carry out mission requirements. Current Air Force systems such as the Combat Information Transport Systems (CITS), Theater Deployable Communications (TDC) and Theater Battle Management - Core Systems (TBMCS) leverage the technology from this project to meet their Info Protect needs/requirements. Additionally, this project utilizes Info Assurance technology investments by DARPA as a jump-start for providing solution to Air Force requirements and cooperates with DISA and other services/agencies to ensure DII info protect requirements are complied with.

Also, R&D is required in automated damage assessment and recovery processes because Air Force does not currently have the automated assessment, planning and decision tools to support prudent Information Operations damage recovery. Summarizing, this program is in budget activity 7-Operational System Development, Research category 6.7 because it addresses the development and transition of communications and computer network Information Protection technologies/tools in order to protect, detect, defend and respond to information attack against Air Force Network Control Centers (AFNCCs), Theater Deployable Communications (TDC) systems and the National/Defense Information Infrastructure.

**(U) Acquisition Strategy:**

All major contracts within this Program Element are awarded after full and open competition.

Project 7820

Page 3 of 20 Pages

Exhibit R-2 (PE 0303140F)

1491

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE	7820
<b>7 - Operational System Development</b>			<b>0303140F Information Systems Security Program</b>	
(U) FY 1997 (\$ in Thousands):				
-	(U)	\$230	Initiate development of secure data handling system for F-22 Integrated Weapon Systems (IWS) Data Base	
-	(U)	\$545	Develop mechanisms to protect databases from IW attacks	
-	(U)	\$545	Continue development of security analysis tools for Base Information Protection	
-	(U)	\$710	Initiate development of secure interoperable distributed computing system	
-	(U)	\$1,100	Prototype adaptive voice/data networks	
-	(U)	\$250	Initiate effort to develop technology for secure distributed collaborative planning	
-	(U)	\$150	Initiate effort to transition DARPA intrusion detection technology the Air Force Information Warfare Center (AFIWC)	
-	(U)	\$400	Initiate effort to demonstrate INFOSEC for Air Force Mission Support System (AFMSS)	
-	(U)	\$2,607	Complete development of Electronic Key Management System (Tier 1)	
-	(U)	\$130	Initiate Vulnerability Assessment & Risk Management toolset prototyping	
-	(U)	\$6,667	Total	
(U) FY 1998 (\$ in Thousands):				
-	(U)	\$430	Continue development of secure interoperable distributed computing systems	
-	(U)	\$430	Prototype security analysis tools for Base Information Protection (BIP)	
-	(U)	\$430	Continue effort to transition DARPA intrusion detection technology the Air Force Information Warfare Center (AFIWC) and BIP	
-	(U)	\$430	Continue effort to demonstrate INFOSEC for Air Force Network Control Centers (AFNCCCs)	
-	(U)	\$430	Continue effort to develop technology for secure distributed collaborative planning	
-	(U)	\$550	Continue investigation of techniques for commercial software evaluation	
-	(U)	\$621	Develop prototype secure wrapper to protect systems from COTS software security risks	
-	(U)	\$3,321	Total	
(U) FY 1999 (\$ in Thousands):				
-	(U)	\$256	Continue development of secure data handling system for F-22 Integrated Weapon Systems (IWS) Data Base	
-	(U)	\$710	Continue development of secure interoperable distributed computing systems	
-	(U)	\$750	Continue development of technology for self-healing network system	
-	(U)	\$744	Develop methodologies for commercial software evaluation	
-	(U)	\$510	Complete effort to transition DARPA intrusion detection technology the Air Force Information Warfare Center (AFIWC) and BIP	
-	(U)	\$490	Complete effort to demonstrate INFOSEC for Air Force Network Control Centers (AFNCCCs)	
-	(U)	\$500	Initiate effort to transition secure wrapper technologies into Air Force systems.	
Project 7820			Page 4 of 20 Pages	Exhibit R-2 (PE 0303140F)

1492

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303140F Information Systems Security Program

7820

- (U) \$500 Initiate effort for automatic capability to trace source of intrusions

- (U) \$4,460 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998 PB)	6,548	3,561	4,550	
(U) Appropriated Value	6,900	3,561		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-182	-158		
b. SBIR	-170	-82		
c. Omnibus or Other Above Threshold Reprogram	+130			
d. Below Threshold Reprogramming	-11		-90	
(U) Adjustments to Budget Years Since FY 1997 PB			4,460	
(U) Current Budget Submit/FY 1999 President's Budget	6,667	3,321		TBD

## (U) Change Summary Explanation:

Funding: FY97 reprogramming of \$130,000 to initiate early VA/RM tool set prototyping efforts

Schedule: Initiating VA/RM toolset prototyping accelerates delivery to SPOs by 18 months.

Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands)

(U) Not applicable

Project 7820

Page 5 of 20 Pages

Exhibit R-2 (PE 0303140F)

1493

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE		PROJECT					
7 - Operational System Development		February 1998		7820					
(U) D. Schedule Profile		PE NUMBER AND TITLE		Information Systems Security Program					
		FY 1997		FY 1998		FY 1999			
		1	2	3	4	1	2	3	4
(U) Requirements Review Board									
(U) AFNCC INFOSEC Transition								X	
(U) Adaptive Voice/Data Network Demonstrations				*				X	
(U) Secure Wrapper Development									
(U) Self-Healing Network Demonstration									
(U) F-22 IWS DB								X	
(U) Secure Interoperable Distributed Computing System									X
(U) Trusted Rubix			*						X
(U) Theater Battle Management Secure Interfaces				*					
(U) Begin Development Methodology for Commercial Software Evaluation									
(U) DARPA Information Assurance Technology Transition								X	
(U) Initiate Secure Wrapper Technology Transition								X	
(U) Initiate Technology for Tracing Sources of Intrusions								X	

Project 7820

Page 6 of 20 Pages

Exhibit R-2 (PE 0303140F)

1494

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303140F Information Systems Security Program

7820

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Secure Data Handling System	630	0	256
(U) Database Protection Mechanisms	545	411	
(U) Security Analysis Tools	545	430	
(U) DARPA Technology Insertion/Transition	150	860	510
(U) Secure Distributed Collaborative Planning	960	860	710
(U) IP Integration Framework		760	490
(U) Adaptive Voice/Data Networks	1,100	0	750
(U) Electronic Key Management System	2,607		500
(U) Traceback/Forensics			500
(U) Wrappers to Secure COTS			
(U) VA/RM toolset prototyping	130		
(U) COTS S/W Evaluation			744
(U) Total	6,667	3,321	4,460

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget			Total Program
						FY 1997	FY 1998	FY 1999	
Product Development Organizations									
FFRDC (MITRE)	MIPR	On-Going			0	460	660	700	1,420
Multiple Contractors	CPFF	On-Going			0	6,107	2,286	2,835	TBD
Universities	CPFF	On-Going			0	100	375	925	1,400

Project 7820

Page 7 of 20 Pages

Exhibit R-3 (PE 0303140F)

1495

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY					DATE		PROJECT		
7 - Operational System Development					February 1998		7820		
Contractor or					PE NUMBER AND TITLE		0303140F Information Systems Security Program		
Government	Contract	Method/Type	Award or	Performing	Project	Total	Budget	Budget	Budget to
Performing Activity	or Funding	Vehicle	Obligation	Activity	Office	Prior to	FY 1997	FY 1998	Complete
			Date	EAC	EAC	FY 1997	FY 1997	FY 1998	Complete
									Program
Support and Management Organizations									
N/A									
Test and Evaluation Organizations									
N/A									
Government Furnished Property:									
Contract									
Item	Method/Type	Award or	Delivery						
Description	or Funding	Obligation	Date						
	Vehicle	Date	Date						
				Total	Budget	Budget	Budget	Budget to	Total
				Prior to	FY 1997	FY 1998	FY 1999	Complete	Program
				FY 1997	FY 1997	FY 1998	FY 1999	Complete	Program
Product Development Property									
N/A									
Support and Management Property									
N/A									
Test and Evaluation Property									
N/A									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									
0 3,321 4,460 Continuing TBD									
0 0 0 0 0									
0 0 0 0 0									
0 3,321 4,460 Continuing TBD									

Project 7820

Page 8 of 20 Pages

Exhibit R-3 (PE 0303140F)

1496

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303140F Information Systems Security Program								4585	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4585	Cryptologic 2000	0	1,640	1,999	1,262	0	0	0	0	4,901	

(U) **A. Mission Description and Budget Item Justification**

The Cryptologic project consists of the Air Force Electronic Key Management Systems (AFEKMS). AFEKMS, in concert with NSA's EKMS, provides a secure and flexible capability for the electronic generation, distribution, accounting, and management of key material, voice callwords, and Communications Security (COMSEC) publications for the F-22 and all AF weapon systems. AFEKMS replaces the existing physical distribution and management system providing COMSEC keying material for USAF Information Protection. Information Protection emphasizes access control, multi-level secure databases, trusted computing and information integrity. AFEKMS is a three tier system structure in a hierarchical arrangement. This tiered structure provides "wholesale" to "retail" to "consumer" capability to distribute, manage and account for COMSEC keying material. Tier 1 installations comprise the "wholesale" capability. Tier 2 installations comprise the distribution network and tier 3 comprises the "retail locations" where keying material leaves the AFEKMS and enters the End Item COMSEC Equipment (EICE) – the consumer.

Acquisition includes Commercial Off The Shelf (COTS) computers and software, contractor developed application software, Government Furnished Equipment (GFE) and software such as the NSA's Local COMSEC Management Software (LCMS). Also, USAF developed application software (UAS) is necessary for unique systems such as the F-22 and unique key fill requirements of EICE for other airborne platforms. The F-22 platform employs KOV-5 modules and uses three types of keys (system keys and codes, traffic keys, and Firefly session keys and parameters). Using a Data Transfer Device (DTD), these keys are loaded directly into the KOV-5 and ground based KS-5 using a Firefly process. The F-22 employs a unique process for getting cryptographic keys into the KOV-5 onboard the F-22 platform. This project enhances NSA developed EKMS S/W to meet F-22 unique requirements. It also upgrades the DTD to correct speed, storage, and operability deficiencies.

(U) **Acquisition Strategy:**  
All major contracts within this Program Element are awarded after full and open competition.

Project 4585

Page 9 of 20 Pages

Exhibit R-2 (PE 0303140F)

1497

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0303140F Information Systems Security Program	4585	
(U) FY 1997 (\$ in Thousands):			
- (U)	\$0		
- (U)	\$0	Total	
(U) FY 1998 (\$ in Thousands):			
- (U)	\$620	Continue LCMS application software development (F-22)	
- (U)	\$703	Initiative DMD/DTD support software development	
- (U)	\$317	Initiate DMD Phase 1 development	
- (U)	\$1,640	Total	
(U) FY 1999 (\$ in Thousands):			
- (U)	\$250	Complete LCMS application software development (F-22)	
- (U)	\$189	Continue DMD/DTD software support development and system integration	
- (U)	\$1,560	Initiate DMD Phase 2 development	
- (U)	\$1,999	Total	

Project 4585

Page 10 of 20 Pages

Exhibit R-2 (PE 0303140F)

1498

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE \_\_\_\_\_

February 1998

## PROJECT

**4585**

## BUDGET ACTIVITY.

## 7 - Operational System Development

**PE NUMBER AND TITLE**

**0303140F Information Systems Security Program**

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

### a. Cong Reductions

**b. SBIR**

**c. Omnibus or Other Above Threshold Reprogram**

#### d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1997 PB

(U) Current Budget Submit/FY 1999 President's Budget

(U) Change Summary Explanation:

**Funding:** None

**Schedule: None**

**Technical: None**

(U) C. Other Program Funding Summary (\$ in Thousands)

N/A

Project 4585

Page 11 of 20 Pages

Exhibit R-2 (PE 0303140F)

1499

**UNCLASSIFIED**

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0303140F Information Systems Security Program

PROJECT  
4585

**(U) D. Schedule Profile**

	FY 1997			FY 1998			FY 1999	
	1	2		3	4		1	2
(U) Complete F-22 UAS Development			4	1	4			
(U) Initiate DMD Phase 1 Development				*				
(U) Initiate DMD Phase 2 Development								
(U) Initiate DMD/DTD Support Software Development				*		X		

Project 4585

Page 12 of 20 Pages

Exhibit R-2 (PE 0303140F)

1500

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

7 - Operational System Development

PE NUMBER AND TITLE

0303140F Information Systems Security Program

PROJECT

4585

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software Development	0	1,640	1,999
(U) Total	0	1,640	1,999

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Motorola Inc. Space & Systems Technology Group (F19628-97-C-0600)	SS/CPFF	APR 97			0	0	585	245	0	830
SAIC Software & Systems Integration Group (GS-35F-44616)	BPA	MAY 98			0	0	1,055	1,754	0	2,809

Support and Management Organizations

N/A

Test and Evaluation Organizations

N/A

Project 4585

Page 13 of 20 Pages

Exhibit R-3 (PE 0303140F)

1501

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0303140F Information Systems Security Program		4585	
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)					
Government Furnished Property:					
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997
					Budget FY 1998
					Budget FY 1999
					Budget to Complete
					Total Program
Product Development Property					
N/A					
Support and Management Property					
N/A					
Test and Evaluation Property					
N/A					
Subtotal Product Development					
Subtotal Support and Management					
Subtotal Test and Evaluation					
Total Project					
				0	1,640
				0	1,999
				0	0
				0	0
				0	0
				0	3,639
				0	0
				0	0
				0	0
				0	3,639

Project 4585

Page 14 of 20 Pages

Exhibit R-3 (PE 0303140F)

1502

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303140F Information Systems Security Program								4579	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4579	Information Warfare	0	0	1,961	1,952	1,945	1,936	1,927	Continuing	TBD	

(U) **A. Mission Description and Budget Item Justification**  
Builds information protection into all AF C2, ISR, and weapons systems. The project provides the acquisition community and operational warfighters the ability to manage the IW risks to their missions and operational tasks based on system threat and vulnerability information. Provides decision makers with countermeasures recommendations, rank-ordered based on most operational utility and relative cost. Looking across all assessment conducted on AF systems, the project also provide the USAF a unique system-of-systems perspective for managing IW risks, policy, and solutions that cut across individual system boundaries. The project consists of two complementary R&D efforts

Information Warfare Vulnerability Assessment & Risk Management (IW VA/RM). The development and sustainment of an IW VA/RM process and toolset comprising procedures, analytical resources, supporting threat, countermeasure, and vulnerability databases, and instruction and training materials. These will enable program acquisition and operational unit customer to conduct their own IW risk assessments. Provides sustainment for tool set, databases, and procedures. Libraries and databases of vulnerabilities, countermeasures, tools, and techniques will be developed and continually updated to allow customers to assess current information and quickly update their assessments and risk posture as threat and vulnerability information changes. Project accumulates results of individual assessments to synthesize an integrate USAF system-of-systems risk posture, supporting JFACC theater-level IW defense.

IW Technical Planning Integrated Product Team (IW TPIPT). Supports modernization planning for Counterinformation (CI) Mission Area and technology planning processes. Continuously identifies and evaluates commercial and Government inventory of available products that can be used to meet Counterinformation mission deficiencies. Develops and coordinates technology development and acquisition plans for resolving mission area deficiencies. Provides Government laboratories and private industry guidance on new technologies needed for the next 10 to 25 years.

(U) **Acquisition Strategy:**  
All major contracts within this Program Element are awarded after full and open competition.

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
<b>7 - Operational System Development</b>		<b>0303140F Information Systems Security Program</b>	<b>4579</b>

  

(U) FY 1997 (\$ in Thousands):	
- (U) \$0	
- (U) \$0	Total
(U) FY 1998 (\$ in Thousands):	
- (U) \$0	
- (U) \$0	Total
(U) FY 1999 (\$ in Thousands):	
- (U) \$709	Exportable VA/RM process and toolset development
- (U) \$441	Establish infrastructure: Intelligence support, metrics measurement, etc.
- (U) \$370	Develop libraries and databases, system-of-systems model
- (U) \$291	IW TPPT activities, analyses, database support
- (U) \$150	Integrated cross program assessments and solution development
- (U) \$1,961	Total

Project 4579

Page 16 of 20 Pages

Exhibit R-2 (PE 0303140F)

1504

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0303140F Information Systems Security Program

PROJECT

4579

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1997 PB

(U) Current Budget Submit/FY 1999 President's Budget

FY 1997	FY 1998	FY 1999	Total
0	0	0	Cost
			0

1,961	TBD
1,961	TBD

(U) Change Summary Explanation:

Funding: FY99 funds added during FY99 APOM for Information Warfare Vulnerability Assessment &amp; Risk Management (V/A/RM) project

Schedule: See initial schedule profile below

Technical: IW V/A/RM project builds info protect into all AF C2, ISR and weapons systems.

(U) C. Other Program Funding Summary (\$ in Thousands)

N/A

Project 4579

Page 17 of 20 Pages

Exhibit R-2 (PE 0303140F)

1505

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303140F Information Systems Security Program

4579

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software development	0	0	715
(U) Systems engineering support	0	0	1,096
(U) Program management support	0	0	150
(U) Total	0	0	1,961

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

Product Development Organizations

Contract to be Awarded	CPFF	OCT 99			0	0	0	715	TBD	TBD
------------------------	------	--------	--	--	---	---	---	-----	-----	-----

Support and Management Organizations

FFRDC (MITRE)	MIPR				0	0	0	596	Continuing	TBD
TEMS (various)	CPFF				0	0	0	500	Continuing	TBD

Test and Evaluation Organizations

Test & Evaluation					0	0	0	150	Continuing	TBD
-------------------	--	--	--	--	---	---	---	-----	------------	-----

Project 4579

Page 19 of 20 Pages

Exhibit R-3 (PE 0303140F)

1507

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)						DATE	February 1998	PROJECT	
BUDGET ACTIVITY		PE NUMBER AND TITLE				4579			
7 - Operational System Development		0303140F Information Systems Security Program				4579			
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)									
Government Furnished Property:									
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Property									
N/A									
Support and Management Property									
N/A									
Test and Evaluation Property									
N/A									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									

Project 4579

Page 20 of 20 Pages

Exhibit R-3 (PE 0303140F)

Project 4579

Page 20 of 20 Pages

Exhibit R-3 (PE 0303140F)

1508

UNCLASSIFIED

PE NUMBER: 0303141F

UNCLASSIFIED

PE TITLE: Global Combat Support System (GCSS)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303141F Global Combat Support System (GCSS)								4655	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4655	GCSS-AF (BLSM II)	14,943	19,745	17,973	19,742	21,317	19,993	22,381	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

\* The FY97 and outyear RDT&E funding for this project was transferred from PE 0308610F, Information Management Automation Program to PE 0303141F, Global Combat Support System - Air Force. This action was taken since the FY96 DoD Appropriations Act directed GCSS-AF to be RDT&E funded. The GCSS-AF program was broken out from PE 0308610F into this separate program element.

(U) **A. Mission Description and Budget Item Justification**  
 The Base Level System Modernization I (BLSM I) was the pilot program for GCSS-AF. The BLSM I program modernized three key base level pilot systems; Manpower Data Systems (MDS), Logistics Module (LOGMOD), and Air Force Operations Resource Management System (AFORMS); to provide essential support to the mission for the Air Force in the areas of manpower, logistics, and flight records. GCSS-AF (once called BLSM II) continues the BLSM I effort with the addition of the Cargo Movement Operations System (CMOS) and the Standard Base Supply System (SBSS). GCSS-AF is the modernization program that will modernize, integrate, evolve, and maintain standard Air Force and Department of Defense (DoD) Combat Support Automated Information Systems (AISs). The products of this development will be:

- (1) A Common Operating Environment (COE). Systems modernized under GCSS-AF will migrate to an open system environment to reduce maintenance cost and integrate the many stove-pipe systems into one integrated management information system of applications. Sustainment costs will be reduced with an increase in productivity through use of a Defense Information Infrastructure (DII) compliant Common Operating Environment (COE). Adaptable applications level software can then be added with minimum effort and expense.
- (2) A Combat Support Information System (CSIS) consisting of supply, maintenance, civil engineering, base accounting and finance functions, personnel and manpower management, and a variety of related services which will move the Air Force into the 21<sup>st</sup> Century with the technology for warfighters to be successful in all scenarios. The CSIS will improve operational readiness by enhancing the capabilities and timeliness of all Air Force standard functional Automated Information Systems (AIS) supporting critical warfighting weapon systems. CSIS will work within an enterprise-wide shared data environment. The shared data environment will become the source of functional support data for command and control decision support systems that support the wing commander, theater battlestaffs, as well as high headquarters. The system will cover both retail and wholesale functions.

This program is in Budget Activity 7, Operational System Development, because the program modernizes Automated Information Systems (AISs). This PE contains only the RDT&E portion of GCSS-AF. No specific procurement funding is identified after FY97. O&M funding will come from the legacy systems being modernized.

(U) **Acquisition Strategy:**  
 All major contracts within this Program Element were awarded after full and open competition.

Project 4655

Page 1 of 7 Pages

Exhibit R-2 (PE 0303141F)

1509

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0303141F Global Combat Support System (GCSS)		4655	
(U) FY 1997 (\$ in Thousands):					
- (U)		GCSS System Contract			
- (U)	\$2,100	Common Operating Environment (COE) Increment 1			
- (U)	\$12,263	Combat Support Information System (CSIS) Increment 1			
- (U)		Operations			
- (U)	\$80	Support Contractors (MITRE, TEMS, Cost)			
- (U)	\$500	BLSM I			
- (U)	\$14,943	Total			
(U) FY 1998 (\$ in Thousands):					
- (U)		GCSS System Contract			
- (U)	\$1,625	Common Operating Environment (COE) Increment 1			
- (U)	\$12,489	Combat Support Information System (CSIS) Increment 1			
- (U)		Operations			
- (U)	\$760	Support Contractors (MITRE, TEMS, Cost)			
- (U)	\$4,871	SPO Operations			
- (U)	\$19,745	Total			
(U) FY 1999 (\$ in Thousands):					
- (U)		GCSS System Contract			
- (U)	\$1,669	Common Operating Environment (COE) Increment 1			
- (U)	\$10,971	Combat Support Information System (CSIS) Increment 1			
- (U)		Operations			
- (U)	\$780	Support Contractors (MITRE, TEMS, Cost)			
- (U)	\$3,489	SPO Operations			
- (U)	\$1,064	Defense Information Infrastructure-Air Force (DII-AF) System Program Office (SPO) Operations			
- (U)	\$17,973	Total			

Project 4655

Page 2 of 7 Pages

Exhibit R-2 (PE 0303141F)

Project 4655

Page 2 of 7 Pages

Exhibit R-2 (PE 0303141F)

1510

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

7 - Operational System Development

PE NUMBER AND TITLE

0303141F Global Combat Support System (GCSS)

PROJECT

4655

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional/General Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogramming

d. Below Threshold Reprogramming

e. Rescissions

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

Total

Cost

Cont.

FY 97

0

0

FY 1998

20,894

20,894

FY 1999

18,334

-695

-454

14,543

400

-361

17,973

Cont.

(U) Change Summary Explanation:

(U) Funding: The FY97 and outyear RDT&E funding for this project was transferred from PE 0308610F, Information Management Automation Program to PE 0303141F, Global Combat Support System - Air Force. This action was taken since the FY96 DoD Appropriations Act directed GCSS-AF be RDT&E funded and because of the high interest in this program, the GCSS-AF program was broken out from PE 0308610F into this separate program element.

(U) Schedule: Impact of funding cuts to the GCSS-AF schedule are still being assessed at this time.

(U) Technical: None.

Project 4655

Page 3 of 7 Pages

Exhibit R-2 (PE 0303141F)

1511

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE					DATE	PROJECT	
7 - Operational System Development		0303141F Global Combat Support System (GCSS)					February 1998	4655	
(U) C. Other Program Funding Summary (\$ in Thousands)									
		FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	To Total Cost
	(U) Other Proc AF, BA 7, P-1:55, (Phase 1)*	996							12,512
	(U) Other Proc AF, BA 7, P-1:55, (Phase 2)**	7,200							7,200
	(U) O&M, AF***	7,900							7,900
	(U) O&M (LOGMOD)****		4,989	3,630	3,781	3,937	4,074	4,221	TBD
	(U) O&M (AFORMS)****		3,675	2,111	2,173	2,246	2,330	2,423	TBD
	(U) O&M (SBSS)****		13,816	15,634	18,304	17,821	18,775	19,660	TBD
	(U) O&M (MDS)****		2,702	2,351	2,397	2,448	2,501	2,558	TBD
	(U) O&M (CMOS)****		3,591	4,001	3,721	3,814	3,962	4,102	TBD
	(U) Other Proc AF, BA 7, P-1:55, (CMOS)		404	316	332	340	336	329	TBD
* Funding for fielding the Phase 1 prototype systems.									
** Funding for enterprise license for Commercial Off-the-Shelf Software part of SBSS modernization solution									
*** Support Phase I prototype systems and manpower/DBOF costs (in FY98+ these costs are in RDT&E lines shown above)									
**** Legacy systems' O&M funds currently used for system support will be transitioned to support the new systems (COE and CSIS).									
(U) D. Schedule Profile									
		FY 1997				FY 1998			FY 1999
	(U) Complete Phase 1	1	2	3	4	1	2	3	4
	(U) Phase 2 Increment 1.			X					
	(U) Begin CSIS Increment 1								
	(U) Complete CSIS Increment 1							X	
	(U) Begin Rehost prototypes								
	(U) Complete Rehost prototypes								
	(U) Begin COE Increment 1								
	(U) Complete COE Increment 1								
	(U) Phase 2 Increment 2.							X	
	(U) Begin CSIS Increment 2								
	(U) Begin COE Refresh/Architecture							X	
								X	

Project 4655

Page 4 of 7 Pages

Exhibit R-2 (PE 0303141F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			
7 - Operational System Development	0303141F Global Combat Support System (GCSS)			4655
(U) A. <u>Project Cost Breakdown (\$000 in Thousands)</u>				
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) GCSS-AF System Contract				
(U) Common Operating Environment (COE) Inc 1		2,100	1,625	1,669
(U) Combat Support Information System (CSIS) Inc 1		12,263	12,489	10,971
(U) Operations				
(U) Support Contractor (MITRE, TEMS, Cost)		80	760	780
(U) SPO Operations		0	4,871	3,489
(U) DII-AF SPO Operations				1,064
(U) BLSM I		500		
(U) Total.		14,943	19,745	17,973

Project 4655

Page 5 of 7 Pages

Exhibit R-3 (PE 0303141F)

1513

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
7 - Operational System Development		0303141F Global Combat Support System (GCSS)				February 1998		4655	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)									
Performing Organizations:									
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Total Budget to Complete Program
Product Development Organizations									
Lockheed Martin	IDIQ	15 Aug 95	N/A	N/A	4,417	14,363	15,263	13,001	Con. Cont
Support and Management Organizations									
MITRE	Var		N/A	N/A	73	35	395	380	Cont
TEMS	Var		N/A	N/A	1,449	45	365	400	Cont
ESC	N/A		N/A	N/A	3,851	500	3,722	4,192	Cont
Test and Evaluation Organizations									
Not applicable.									
Project 4655		Page 6 of 7 Pages				Exhibit R-3 (PE 0303141F)			

Project 4655

Page 6 of 7 Pages

Exhibit R-3 (PE 0303141F)

1514

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303141F Global Combat Support System (GCSS)

4655

## (U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Government Furnished Property: Not applicable.										
Subtotal Product Development										
Subtotal Support and Management										
Subtotal Test and Evaluation										
Total Project										
					4,417	14,363	15,263	13,001	Cont	Cont
					5,373	580	4,482	4,972	Cont	Cont
					9,790	14,943	19,745	17,973	Cont	Cont

Project 4655

Page 7 of 7 Pages

Exhibit R-3 (PE 0303141F)

1515

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0303144F

PE TITLE: Electromag Compatibility Analysis Ctr

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303144F Electromag Compatibility Analysis Ctr								649E	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
649E Electromagnetic Compatibility Analysis Center (ECAC)*		7,295	7,588	0	0	0	0	0	TBD	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**\*The Joint Spectrum Center budget was moved to Defense Information Systems Agency beginning in FY99.**

(U) **A. Mission Description and Budget Item Justification** The Joint Spectrum Center, formerly called the Electromagnetic Compatibility Analysis Center (ECAC), serves as the DoD focal point for electromagnetic (EM) spectrum management matters in support of the Unified Commands, Military Departments, and Defense Agencies in planning, acquisition, training, and operations. The Joint Spectrum Center receives operational guidance from the Joint Staff (J6) and policy guidance from the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD(C3I)). Air Force, the designated Executive Agent for the Joint Spectrum Center, is responsible for programming, budgeting, and financing the Joint Program. Joint Spectrum Center realigned from Air Force to Defense Information Systems Agency, PE 0303153K beginning in FY1999. Effective 22 December 1997, Joint Spectrum Center reports operationally to Defense Information Systems Agency. The Joint Spectrum Center is the responsible activity for DoD spectrum management and use automation for strategic, theater, and tactical operations. The Joint Spectrum Center has the responsibility for architecture and standardization of DoD automated spectrum information and management systems. Specifically, the Center designs, develops, and maintains DoD automated spectrum management systems, evaluation tools, and databases employed by the Unified Commands, Military Departments, and Defense Agencies. The Joint Spectrum Center databases are the prime sources of information for DoD use of the EM spectrum. The Joint Spectrum Center provides guidance and assistance to Office of Assistant Secretary of Defense (OASD), Joint Staff, DoD activities and Unified Commands to ensure development and acquisition of electromagnetically compatible systems and for the effective deployment of these systems in military operations. This Center is the focal point for spectrum related support, Electromagnetic Environmental Effects (E3), and EM interference resolution assistance to operational units including deployable support to CINC Joint Task Forces. The Joint Spectrum Center mission is integral to other vital activities such as Information Warfare (IW), Command and Control (C2) Protect and other defensive C3 warfare activities as directed by the Joint Staff. This program is in budget activity 7 - Operational System Development, because it involves efforts supporting operational systems development.

(U) **Acquisition Strategy:** Engineering support services for the Joint Spectrum Center are provided by contract. No in-house government capability exists, nor is it practical to develop one, that can provide the expertise necessary to fulfill the mission and responsibilities of the Joint Spectrum Center. The basic period of the current cost plus award fee contract ends 30 September 1998. The contract has provision for option to renew for an additional two years (1 October 1998 through 30 September 1999 and 1 October 1999 - 30 September 2000). Full and open competition will be used for acquisition of follow-on contract(s). At the appropriate time, a request for sources will be synopsized in the Commerce Business Daily (CBD) for the purpose of identifying potential sources for the Joint Spectrum Center support requirements.

Project 649E

Page 1 of 7 Pages

Exhibit R-2 (PE 0303144F)

1517

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	649E
7 - Operational System Development		0303144F Electromag Compatibility Analysis Ctr	
<p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <p>- (U) \$1,975 Spectrum Policy and Spectrum Requirements Analysis support to Office of Assistant Secretary of Defense and Joint Staff</p> <p>- (U) \$1,300 Initiated DoD Standard Spectrum Management Information System (Spectrum XXI)</p> <p>- (U) \$2,943 Continued development of DoD electromagnetic compatibility databases and models and simulations</p> <p>- (U) \$1,077 Initiated DoD Joint Electromagnetic Effects (E3) Ordnance Program</p> <p>- (U) \$7,295 Total</p> <p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <p>- (U) \$1,845 Spectrum Policy and Spectrum Requirements Analysis support to Office of Assistant Secretary of Defense and Joint Staff</p> <p>- (U) \$2,245 Continue development of DoD Standard Spectrum Management Information System (Spectrum XXI)</p> <p>- (U) \$2,303 Continue development of DoD electromagnetic compatibility (EMC) databases and models and simulations</p> <p>- (U) \$1,195 Continue DoD Joint Electromagnetic Effects (E3) Ordnance Program Development</p> <p>- (U) \$7,588 Total</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <p>- (U) \$0 Total</p>			

Project 649E

Page 2 of 7 Pages

Exhibit R-2 (PE 0303144F)

1518

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303144F Electromag Compatibility Analysis Ctr

649E

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget	7,307	7,844	7,973	
(U) Appropriated Value	7,667	7,844		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-160	-256		
b. SBIR	-200			
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-12		-7,973	
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY99 President's Budget	7,295	7,588	0	TBD

Project 649E

Page 3 of 7 Pages

Exhibit R-2 (PE 0303144F)

1519

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0303144F Electromag Compatibility Analysis Ctr

PROJECT  
649E

**(U) Change Summary Explanation:**

Funding: FY99 adjustment due to realignment of Joint Spectrum Center to Defense Information Systems Agency PE 0303153K.

**Schedule:** N/A

**Technical:** N/A

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl. TBD	Total Cost TBDt
(U) Operations & Maintenance AF BA 1	11,245	11,940							
(U) Operations & Maintenance DISA PE0303153K			14,130	14,268	13,748	13,900	14,254		
(U) Research & Development DISA PE 0303153K			8,839	8,967	9,039	9,581	9,892		

**(U) D. Schedule Profile**

		<u>FY 1997</u>		<u>FY 1998</u>		<u>FY 1999</u>	
		1		2	3	4	1
(U) Decision to Exercise Contract Option				4	1	4	3
(U) Exercise Contract Option			X				
(U) Commerce Business Daily Notice for engineering support services for Joint Spectrum Center				X	X		X

Project 649E

Page 4 of 7 Pages

Exhibit R-2 (PE 0303144F)

1520

**UNCLASSIFIED**

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
7 - Operational System Development		0303144F Electromag Compatibility Analysis Ctr	649E
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>			
		<u>FY 1997</u>	<u>FY 1998</u>
			<u>FY 1999</u>
(U)	Contractor Engineering Support	7,295	7,588
(U)	Total	7,295	7,588
			0
			0

Project 649E

Page 5 of 7 Pages

Exhibit R-3 (PE 0303144F)

1521

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998	PROJECT			
BUDGET ACTIVITY		PE NUMBER AND TITLE			0303144F Electromag Compatibility Analysis Ctr			649E		
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										
Performing Organizations:										
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
None										
Support and Management Organizations										
None										
Test and Evaluation Organizations										
IIT Research Institute, Annapolis MD	C/CPAF/ Allot	17 May 95	17,487	17,487	3,004	7,045	7,438			17,487

Project 649E

Page 6 of 7 Pages

Exhibit R-3 (PE 0303144F)

1522

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303144F Electromag Compatibility Analysis Ctr

649E

Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Test and Evaluation Property									
GFP (hardware & software)	C/CPAF	17May95	1Jul95-30Sep98		250	150	0		TBD
Subtotal Product Development				0	0	0	0	0	0
Subtotal Support and Management				0	0	0	0	0	0
Subtotal Test and Evaluation				0	250	150	0		
Total Project				3,004	7,295	7,588	0		17,487

Project 649E

Page 7 of 7 Pages

Exhibit R-3 (PE 0303144F)

1523

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0303150F

UNCLASSIFIED

PE TITLE: WWMCCS/Global Command and Control System

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE							
BUDGET ACTIVITY		PROJECT							
7 - Operational System Development		February 1998							
PE NUMBER AND TITLE		PROJECT							
0303150F WWMCCS/Global Command and Control System		4667							
Control System									
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4667 Global Command and Control System - AF	*	*	13,675	13,176	15,709	16,522	14,665	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0
<p>*Note 1 : Beginning in FY 1999, all funding in Program Element (PE) 0303152F was moved to PE 0303150F and the program title changed from Automated Data Processing Equipment to Global Command and Control System (GCCS). This is an effort to consolidate/centralize accounting for the AF-GCCS program, which is now the operational system of record.</p> <p>Note 2 : In future exhibits, Deliberate and Crisis Action Planning and Execution Segments (DCAPES) will be submitted as a separate project (4763). For administrative purposes, FY98 &amp; FY99 DCAPES funds will be executed in project 4763.</p>									
<p>(U) <b>A. Mission Description and Budget Item Justification</b></p> <p>(U) The Global Command and Control System (GCCS) is the designated Command and Control migration system for the DoD. It is an integrated Command, Control, Communications, Computer, and Intelligence (C4I) system capable of supporting all echelons of the US military command structure. GCCS solves C4I interoperability problems between Service components by establishing a Defense Information Infrastructure (DII) Common Operating Environment (COE), as the first step to eliminating stovepipe systems. The AF is responsible for developing four of the modules that will make up this COE, and integration of AF unique applications with the COE. This effort is Budget Activity 7, Operational System Development, because the program develops and implements software for an operational computer network.</p> <p>(U) <b>Acquisition Strategy:</b> Electronics Systems Center (ESC), Hanscom AFB, MA will manage the overall GCCS-AF program (COE and Crisis Action Planning Evolution) development. The COE development is being performed in-house to support AF contributions to the joint service GCCS program and to support AF mission applications that utilize the COE. The Crisis Action Planning Evolution and associated prototype software development will be commercially developed under the current Command and Control Product Line (CCPL) contract at ESC to deliver a Deliberate and Crisis Action Planning and Execution Segments (DCAPES). During FY 98, a contractor will be selected from the pre-qualified CCPL contractors to develop the DCAPES.</p> <p>(U) <b>FY 1997</b> (Funding reported in PE 0303152)  - (U) 0 Total</p> <p>(U) <b>FY 1998</b> (Funding reported in PE 0303152)  - (U) 0 Total</p>									

Project 4667

Page 1 of 5 Pages

Exhibit R-2 (PE 0303150F)

1525

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0303150F WWMCCS/Global Command and Control System

PROJECT

4667

(U) FY 1999									
- (U) 3,875	GCCS Migration Support /COE Development								
- (U) 7,180	Crisis Action Planning Evolution								
- (U) 2,620	Prototype software development								
- (U) 13,675	Total								
 (U) B. <u>Program Change Summary (\$ in Thousands)</u>									
(U) Previous President's Budget (FY 1998 PB)									
(U) Appropriated Value									
(U) Adjustments to Appropriated Value									
a. Congressional/General Reductions									
b. SBIR									
c. Omnibus or Other Above Threshold Reprogram									
d. Below Threshold Reprogramming									
e. Rescissions									
(U) Adjustments to Budget Year since FY 1998 PB									
(U) Current Budget Submit/FY 1999 President's Budget									
(U) Change Summary Explanation:									

	FY 1997	FY 1998	FY 1999	Total
	0	0	0	Cost
				TBD

(U) Change Summary Explanation:

Funding: Funding represents the consolidation of PE0303152 to 0303150; FY 97/98 was reported in PE 0303152. In addition to the transfer of \$6,650 due to the PE consolidation in FY99, \$7,025 was added to the program for development of the Deliberate and Crisis Action Planning and Execution System

System

(DCAPES).

Schedule: The DCAPES schedule is currently being defined.

Technical: GCCS is an evolutionary system. The DII COE requirements continually evolve to solve C4I interoperability problems and to support the efficient migration/integration of C4I applications at all levels of command.

Project 4667

Page 2 of 5 Pages

Exhibit R-2 (PE 0303150F)

1526

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0303150F WWMCCS/Global Command and Control System

4667

(U) C. Other Program Funding Summary in PE 33152F (\$ in Thousands)

	FY1997	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003	To Complete	Total Cost
BA-7, P-50									
(U) Other Procurement, Air Force	*	*	5,819	5,806	5,783	5,851	5,871	Continuing	TBD
(U) Operations and Maintenance, Air Force	*	*	62,731	64,468	63,024	64,524	67,952	Continuing	TBD
Reported as part of PE 0303152									

(U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
1.) (U) Common Operating Environment (COE) Development*									
• Multi-Media						X		X	
• Distributed Computing Services						X		X	
• Office Automation						X		X	
• Management Services						X		X	
2.) (U) Crisis Action Planning Enhancement							X		

(U) \* Note: The COE development is incremental with scheduled releases based on the Defense Information Systems Agency (DISA) DII COE schedule.

Project 4667

Page 3 of 5 Pages

Exhibit R-2 (PE 0303150F)

1527

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0303150F WWMCCS/Global Command and Control System		4667	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>		FY 1997	FY 1998	FY 1999	
(U) Common Operating Environment (COE) Development				3,875	
(U) Crisis Action Planning Evolution				7,180	
(U) Prototype software development				2,620	
(U) Total		0*	0*	13,675	
* In PE 0303152					
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
<b>Performing Organizations:</b>					
<u>Product Development Organizations</u>					
Contractor or Government	Method/Type or Contract	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997
Performing Activity	Vehicle		EAC	EAC	FY 1997
(U) Rome Lab	FFP/FCA	Jun 95	N/A	N/A	0
(U) Material	various	various	N/A	N/A	0
(U) Systems Group	various	various	N/A	N/A	*
(U) Electronic Systems Center					9,275
					TBD
<u>Support and Management Organizations</u>					
(U) TEMS	OT&M	Jun 95	N/A	N/A	*
(U) MITRE	OT&M	Jun 95	N/A	N/A	*
					1,800
					2,600
					TBD
					TBD
<u>Test and Evaluation Organizations</u>					
(U) Not Applicable					
<b>Government Furnished Property: None</b>					
Project 4667					
Page 4 of 5 Pages				Exhibit R-3 (PE 0303150F)	

1528

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

7 - Operational System Development

4667

PE NUMBER AND TITLE

0303150F WWMCCS/Global Command and  
Control System

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Subtotal Product Development				*	*	*	13,675	TBD	TBD
Subtotal Support and Management				*	0	0	0	TBD	TBD
Subtotal Test & Evaluation				0	0	0	0	0	0
Total				*	0	0	13,675	TBD	TBD

\* Reported in PE 0303152

Project 4667

Page 5 of 5 Pages

Exhibit R-3 (PE 0303150F)

1529

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0303152F

UNCLASSIFIED

PE TITLE: Automated Data Processing Equipment

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303152F Automated Data Processing Equipment								4485	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4485 AF-GCCS		7,277	6,741	*	*	*	*	*	*	TBD	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

\*Note: Beginning in FY 1999, all funding in Program Element (PE) 0303152F was transferred to PE 0303150F and the program title changed from Automated Data Processing Equipment to Global Command and Control System (GCCS). This is an effort to consolidate/centralize accounting for the AF-GCCS program, which is now the operational system of record. Total cost for this PE has been transferred to PE 0303150F and will be included in that amount.

(U) A. Mission Description and Budget Item Justification

(U) The Global Command and Control System (GCCS) is the designated Command and Control migration system for the DoD. It is an integrated Command, Control, Communications, Computer, and Intelligence (C4I) system capable of supporting all echelons of the US military command structure. GCCS solves C4I interoperability problems between Service components by establishing a Defense Information Infrastructure (DII) Common Operating Environment (COE), as the first step to eliminating stovepipe systems. The AF is responsible for developing four of the modules that will make up this COE, and integration of AF unique applications with the COE. This effort is Budget Activity 7, Operational System Development, because the program develops and implements software for an operational computer network.

(U) Acquisition Strategy: Electronics Systems Center (ESC), Hanscom AFB, MA will manage the overall GCCS-AF program (COE and Crisis Action Planning Evolution) development. The COE development is being performed in-house to support AF contributions to the joint service GCCS program and to support AF mission applications that utilize the COE. The Crisis Action Planning Evolution and associated prototype software development will be commercially developed under the current Command and Control Product Line (CCPL) contract at ESC to deliver a Deliberate and Crisis Action Planning and Execution Segments (DCAPES). During FY 98, a contractor will be selected from the pre-qualified CCPL contractors to develop the DCAPES.

(U)	FY 1997	
-	(U) 4,605	COE Development
-	(U) 1,872	Crisis Action Planning Evolution
-	(U) 800	Enhanced the Operational Tasking and Priority System (OT&P) to support user identified Functional Process Improvements
-	(U) 7,277	Total

Project 4485

Page 1 of 5 Pages

Exhibit R-2 (PE 0303152F)

Project 4485

Page 1 of 5 Pages

Exhibit R-2 (PE 0303152F)

1531

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

## 7 - Operational System Development

0303152F Automated Data Processing Equipment

PROJECT  
4485

(U) FY 1998

COE Development	(U) 3,046
Crisis Action Planning Evolution	(U) 2,592
GCCS Migration Support	(U) 1,103
Total	(U) 6,741

(U) FY 1999 (Funding reported in PE 0303150)

**(U) B. Program Change Summary (\$ in Thousands)**

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

### a. Congressional/General Reductions

**b. SBIR**

c. Omnibus or Other Above Threshold Reprogram

#### d. Below Threshold Reprogramming

### e. Rescissions

(U) Adjustments to Budget Year since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

**(U) Change Summary Explanation:**

Funding: FY 99 funds transferred to PE 0303150 due to PE consolidation.

**Schedule:** No change

**Technical:** GCCS is an evolutionary system. The DII COE requirements continually evolve to solve C4I interoperability problems and to support the efficient migration/integration of C4I applications at all levels of command.

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
	7,299	6,820	6,650
Total			<u>Cost</u>
			<u>TBD</u>

-157 -910  
-25 -169

-10 -12

-6,650 0

TBD

Project 4485

Page 2 of 5 Pages

1532

Exhibit R-2 (PE 0303152F)

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303152F Automated Data Processing Equipment 4485

## (U) C. Other Program Funding Summary in PE 33152F (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	Complete	To	Total Cost
BA-7, P-50										
(U) Other Procurement, Air Force	9,830	7,079	*	*	*	*	*	*	*	TBD
(U) Operations and Maintenance, Air Force	14,364	10	*	*	*	*	*	*	*	TBD
* Reported as part of PE 0303150										

## (U) D. Schedule Profile

## 1.) (U) Common Operating Environment

## (COE) Development\*

- Multi-Media
- Distributed Computing Services
- Office Automation
- Management Services

## 2.) (U) Crisis Action Planning Enhancement

	FY 1997			FY 1998			FY 1999	
	1	2	3	4	1	2	3	4
(U) Common Operating Environment (COE) Development*								
• Multi-Media				X				
• Distributed Computing Services				X				
• Office Automation				X				
• Management Services				X				
(U) Crisis Action Planning Enhancement				X				

(U) \* Note: The COE development is incremental with scheduled releases based on the Defense Information Systems Agency (DISA) DII COE schedule, FY 99 schedule reported as part of PE 0303150.

Project 4485

Page 3 of 5 Pages

Exhibit R-2 (PE 0303152F)

1533

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4485

## 7 - Operational System Development

0303152F Automated Data Processing Equipment

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Common Operating Environment (COE) Development	4,492	3,046	
(U) Crisis Action Planning Evolution	1,872	2,592	
(U) Operational Testing and Planning (OT&P) Enhancement	913		
(U) GCCS Migration Support		1,103	
(U) Total	7,277	6,741	0*

\*Funding moved to PE 0303150F

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:Product Development Organizations

Contractor or Government	Method/Type or Contract	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	Budget FY 1999	Budget to Complete	Total Program
(U) Rome Lab	Vehicle	Jun 95	N/A	N/A	250	0	0	0		250
(U) Material	various	various	N/A	N/A	1,400	0	0	0		1,400
Systems Group	various	various	N/A	N/A	85	0	0	0		85
(U) Miscellaneous	various	various	N/A	N/A	0	2,177	2,941	*		*13,972
(U) Electronic	various	various	N/A	N/A						
Systems Center										

Support and Management Organizations

(U) TEMS	OT&M	Jun 95	N/A	N/A	150	1,500	1,200	0		2,850
(U) MITRE	OT&M	Jun 95	N/A	N/A	0	3,600	2,600	0		6,200
(U) Miscellaneous	various	various	N/A	N/A	15		0	0		15

Test and Evaluation Organizations

(U) Not Applicable

Project 4485

Page 4 of 5 Pages

Exhibit R-3 (PE 0303152F)

1534

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE		February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT			
7 - Operational System Development		0303152F Automated Data Processing Equipment				4485			
Government Furnished Property: None									
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	FY 1997	FY 1998	Budget* FY 1999	Budget to Complete	Total Program
N/A									
Subtotal Product Development				1,735	7,277	6,741	0	0	15,707
Subtotal Support and Management				165		0	0	0	165
Subtotal T&E				0	0	0	0	0	0
(U) Total				1,900	7,277	6,741	0	0	15,872
* Reported in PE 0303150									
Total program costs reflect only those costs included in this PE through FY98									
Project 4485		Page 5 of 5 Pages				Exhibit R-3 (PE 0303152F)			

1535

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0303601F

PE TITLE: MILSTAR Satellite Comm Sys (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0303601F MILSTAR Satellite Comm Sys (Space)								2487	
COST (\$ in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2487	MILSTAR (AF Terminals)	21,752	11,450	2,352	15,736	30,140	2,410	403	800	1,937,934	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

Note: FY96 funding was for Milstar EHF terminals only. Funding includes Milstar EHF terminals, SHF terminals and UHF SATCOM from FY97 and beyond. UHF SATCOM FY96 and prior year funding is in PE 0303606F (UHF SATCOM). SHF terminals prior year funding is in PE 0303605F. All programs prior year funding is included in total program cost.

**(U) A. Mission Description and Budget Item Justification**  
 Military Satellite Communications (MILSATCOM) provides worldwide communications to strategic and tactical warfighters. The MILSATCOM Terminals Program contains efforts to develop equipment for Air Force users to communicate over military satellites, including Milstar, Ultra High Frequency (UHF) satellites, and Defense Satellite Communication System (DSCS). Global Broadcast Service (GBS) is a joint program to implement a world-wide, high-capacity satellite broadcast information system that will provide a continuous, high speed, one-way flow of high volume classified and unclassified data, imagery and other information to forces in garrison, deployed, or on the move. Milstar ground and airborne Command Post Terminals (CPT) enhancements, which were procured in FY93 through two contractors, are continuing. The Air Force's Milstar tactical terminals, the Single Channel Anti-Jam Manportable (SCAMP) and the Secure, Mobile, Anti-Jam, Reliable, Tactical Terminal (SMART-T), are funded by the Air Force and procured by the Army. Increasing requirements for UHF satellite capacity, coupled with limited channel capacity, led the Joint Staff to mandate new standards for UHF users that are designed to improve satellite access and efficiency by utilizing Demand Assigned Multiple Access (DAMA) techniques. Development efforts in the UHF SATCOM program are primarily focused on the Network Control System (NCS) and ground and airborne DAMA terminals design and implementation. DSCS terminal procurement efforts sustain and modernize the Ground Mobile Forces terminal and the Jam-Resistant Secure Communications (JRSC) subnet of DSCS. This effort is funded in Budget Activity 7 Operational System Development because it has completed a Milestone III review and is in production.

**(U) Acquisition Strategy:**  
 All eighty-one Milstar Command Post terminals have been procured with investment funds. Software enhancements, testing, EDM repair, program, and technical support are continuing. These efforts will be modifications to existing contracts.

(U) FY 1997	
- (U) \$4,233	Continued MILSATCOM Terminals program support activities
- (U) \$13,671	Developed CPT upgrades and modifications
- (U) \$506	Continued UHF and AFSATCOM terminal modifications
- (U) \$755	Continued Milstar testing activities
- (U) \$2,587	Completed Network Control System enhancements and conducted worldwide system test
- (U) \$21,752	Total

Project 2487

Exhibit R-2 (PE 0303601F)

Page 1 of 5 Pages

1537

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																																												
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	2487																																												
7 - Operational System Development		0303601F MILSTAR Satellite Comm Sys (Space)																																													
<p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$3,324 Continue basic activities to support MILSATCOM terminals</li> <li>- (U) \$6,172 Develop CPT upgrades and processor modifications</li> <li>- (U) \$1,354 Continue Milstar testing activities</li> <li>- (U) \$600 Network Control System Milstandard upgrade</li> <li>- (U) \$11,450 Total</li> </ul> <p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$1,470 Continue MILSATCOM terminals support activities</li> <li>- (U) \$882 Develop CPT upgrades and processor modifications</li> <li>- (U) \$2,352 Total</li> </ul> <p>(U) <u>B. Program Change Summary (\$ in Thousands)</u></p> <table border="0"> <thead> <tr> <th></th> <th><u>FY 1997</u></th> <th><u>FY 1998</u></th> <th><u>FY 1999</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY1998)</td> <td>19,289</td> <td>12,871</td> <td>8,799</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>20,348</td> <td>12,871</td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    a. Congressional General Reductions</td> <td>-904</td> <td>-1,421</td> <td></td> </tr> <tr> <td>    b. SBIR</td> <td>-155</td> <td></td> <td></td> </tr> <tr> <td>    c. Omnibus and Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    d. Below Threshold Reprogramming</td> <td>+2,495</td> <td></td> <td></td> </tr> <tr> <td>    e. Rescissions</td> <td>-32</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY1998 PB</td> <td></td> <td></td> <td>-6,447</td> </tr> <tr> <td>(U) Current Budget Submit/FY1999 President's Budget</td> <td>21,752</td> <td>11,450</td> <td>2,352</td> </tr> </tbody> </table> <p>(U) Change Summary Explanation:</p> <p style="padding-left: 20px;">Funding: FY99 adjustment funded higher priority AF and DoD requirements and inflation reductions.</p> <p style="padding-left: 20px;">Schedule: Not Applicable.</p> <p style="padding-left: 20px;">Technical: Not Applicable</p>					<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	(U) Previous President's Budget (FY1998)	19,289	12,871	8,799	(U) Appropriated Value	20,348	12,871		(U) Adjustments to Appropriated Value				a. Congressional General Reductions	-904	-1,421		b. SBIR	-155			c. Omnibus and Other Above Threshold Reprogram				d. Below Threshold Reprogramming	+2,495			e. Rescissions	-32			(U) Adjustments to Budget Years Since FY1998 PB			-6,447	(U) Current Budget Submit/FY1999 President's Budget	21,752	11,450	2,352
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>																																												
(U) Previous President's Budget (FY1998)	19,289	12,871	8,799																																												
(U) Appropriated Value	20,348	12,871																																													
(U) Adjustments to Appropriated Value																																															
a. Congressional General Reductions	-904	-1,421																																													
b. SBIR	-155																																														
c. Omnibus and Other Above Threshold Reprogram																																															
d. Below Threshold Reprogramming	+2,495																																														
e. Rescissions	-32																																														
(U) Adjustments to Budget Years Since FY1998 PB			-6,447																																												
(U) Current Budget Submit/FY1999 President's Budget	21,752	11,450	2,352																																												

Project 2487

Page 2 of 5 Pages

Exhibit R-2 (PE 0303601F)

1538

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0303601F MILSTAR Satellite Comm Sys (Space)

2487

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
(U) Aircraft Procurement, Air Force, P-58	21,111	15,009	10,364	25,505	35,243	81,536	101,450	Compl	Cost
(U) Other Procurement, Air Force, P-70	58,356	18,087	28,233	44,541	32,187	28,174	21,455	Cont	Cont
Procurement funding does not include spares.								Cont	Cont

## Related RDT&amp;E: PE 64479F Milstar LDR/MDR Satellite Communications

PE 33110F Defense Satellite Communications System (DSCS)

PE 63854F Global Broadcast Service

## (U) D. Schedule Profile

	FY 1997				FY 1998			FY 1999		
	1	2	3	4	1	2	3	1	2	3
(U) CPT Upgrades Delivery and Production										
(U) CPT IOT&E Phase II			x							
(U) CPT IOC I			x							
(U) SCAMP Deliveries Begin										
(U) SMART-T Low-Rate Initial Production Begins	x									
(U) UHF Network Control System										
(U) Deliveries		x	x							
(U) Worldwide System Test			x							
(U) Airborne DAMA Terminal Upgrade										
(U) Contract Award/Option										
(U) Deliveries	x		x	x						
(U) Ground DAMA Terminal Deliveries			x	x						

Project 2487

Page 3 of 5 Pages

Exhibit R-2 (PE 0303601F)

1539

UNCLASSIFIED

## UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0303601F MILSTAR Satellite Comm Sys (Space)		2487	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>		
(U) CPT Upgrades	13,671	6,172	882		
(U) UHF Upgrades	506				
(U) Testing Support/Studies	755	1,354			
(U) SPO Ops (PSA, TDY, Trng, Sup/Equip, Ktr Spt/Conv)	4,233	3,324	1,470		
(U) Network Control System World Wide system test	2,587	600			
(U) Total	21,752*	11,450	2,352		
* Does not reflect BTR of -\$700,000.					
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
<u>Performing Organizations:</u>					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
<u>Product Development Organizations</u>					
Raytheon Corp	FPIF/FFP	Jun 85	891,382	891,382	891,382
Rockwell	CPIF	Aug 93	43,068	43,068	43,068
Miscellaneous	Various	Various	N/A	N/A	681,439
ViaSat	C/FFP	Oct 95	3,087	3,087	3,087
<u>Support and Management Organizations</u>					
MITRE	CPAF	Various	N/A	N/A	105,381
SPT Contractors	Various	Various	N/A	N/A	158,050
Tecolote	Various	Various	N/A	N/A	1,966
Miscellaneous	Various	Various	N/A	N/A	22,793
<u>Test and Evaluation Organizations</u>					
Wright-Labs	AF-616*	N/A	N/A	N/A	25,385
Miscellaneous	Various	Various	N/A	N/A	5,383
Project 2487				Exhibit R-3 (PE 0303601F)	

Page 4 of 5 Pages

1540

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				2487
7 - Operational System Development	0303601F MILSTAR Satellite Comm Sys (Space)				
Government Furnished Property: N/A					
Product Development Property N/A					
Support and Management Property N/A					
Test and Evaluation Property N/A					
Subtotal Product Development	1,563,285	14,431	3,686	882	36,692
Subtotal Support and Management	264,173	6,761	6,410	1,470	9,376
Subtotal Test and Evaluation	25,436	560	1,354	0	3,418
Total Project	1,852,894	21,752	11,450	2,352	49,486
* An AF-616 is an internal transfer of funds between AF organizations.					
Project 2487					
Exhibit R-2 (PE 0303601F)					

Page 5 of 5 Pages

1541

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305099F

UNCLASSIFIED

PE TITLE: Global Air Traffic Management (GATM)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
7 - Operational System Development										
0305099F Global Air Traffic Management (GATM)										
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost	0	0	27,056	18,155	10,695	9,776	7,806	TBD	TBD	
4689 Global Access Architecture	0	0	24,899	6,637	8,750	9,776	7,806	TBD	TBD	
4690 VHF Integration	0	0	2,157	11,518	1,945	0	0	0	15,620	
Quantity of RDT&E Articles	0	0	0	1*	0	0	0	0	1*	

\* Mod kit not separately priced.

**(U) A. Mission Description and Budget Item Justification**

4689: Global Air Traffic Management: This effort supports global air traffic operations through the development and acquisition of aviation equipment that will meet the DoD mission and comply with appropriate civil standards. This project will ensure interoperability between multiple platforms and air traffic control functions within the DoD and Federal Aviation Administration (FAA). Common system engineering support, architecture analyses and evaluations will address the requirements of the special operations fleet, fighters, uninhabited air vehicles, common flight management systems, and special mission aircraft. The Global Air Traffic Operations / Mobility Command and Control (GATOC/MC2) System Program Office (SPO) will assist the Major Commands (MAJCOMs) in the development of operational architectures to meet evolving GATM requirements. The SPO will develop and maintain an acquisition master plan addressing performance, schedule, and cost of various aircraft and C2 programs. In addition, this project will formulate a product catalog providing MAJCOMs and SPOs a readily available source of certifiable common GATM systems to allow a rapid acquisition of the necessary equipment and logistics support. This project supports the definition of requirements for ACAT III projects across multiple weapon systems. Funding was sharply increased in FY99 in recognition of need to perform architectural analyses. This endeavor consists of low technical risk system engineering efforts supporting fielded weapon systems, utilizing Commercial Off-The-Shelf (COTS) and Non-Developmental Items (NDI), and is assigned to Budget Activity 7, Operational Systems Development.

4690: VHF Integration: Program integrates VHF communication and navigation equipment onto the MC-130H Combat Talon II aircraft to comply with changing airspace access criteria. Project investigates cost-effective solutions such as integration of Multi Mode receiver (MMR) and modification of the Very High Frequency (VHF) military radio to add 8.33 kHz channel spacing capability. The MMR may incorporate a Microwave Landing System (MLS), Protected Instrument Landing System and Differential Global Positioning System. These modifications would enable the MC-130H and other Air Force Special Operations Command (AFSOC) aircraft to comply with changing International Civil Aviation Organization (ICAO) airspace access criteria. Effort includes engineering design work, mod kit design, and kit proofing. The MC-130H and other Special Operations Forces (SOF) aircraft have software that is highly unique and specialized. Modification of the software will involve changing the code, testing the changes, and updating software documentation and maintenance technical orders. This program will develop mission essential capability for fielded weapon systems and is assigned Budget Activity 7, Operational Systems Development.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0305099F Global Air Traffic Management (GATM)

## (U) Acquisition Strategy:

4689: The GATM Global Access Architecture acquisition strategy enables the GATO/MC2 SPO to guide equipment acquisition supporting global air traffic operations. The SPO will ensure standardization and certification of USAF platforms/systems that operate in the national and global air traffic environments. The SPO will also provide technical expertise and interface with appropriate product/support centers, battle labs, and Department of Defense (DOD) research and development facilities in the execution of assigned tasks. Program Research and Development Agreements (PRDAs), Cooperative Research and Development Agreements (CRDAs), and Indefinite Delivery/Indefinite Quantity (ID/IQ) contracts will be competitively awarded.

4690: The integration acquisition strategy for AFSOC communication/navigation modifications enables the GATO/MC2 SPO to use existing contracts, when possible, to assist in the technical design and integration. The modifications will be accomplished under the SOF Integrated Weapons System Support Program (IWSSP) contract.

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998)	0	0	0	0
(U) Appropriated Value				
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions				
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY1998 PB	0	0	27,056	TBD
(U) Current Budget Submit/1999 President's Budget			27,056	TBD

## (U) Change Summary Explanation:

Funding: FY97 reprogramming was approved by Congress and is not reflected in these numbers. It includes a \$3,036K increase to support the development of a common architecture for Communication, Navigation, Surveillance / Air Traffic Management (CNS/ATM) requirements. Common system engineering support included \$27,056K in FY99. Such a large investment in one year attempts to accomplish architectural analyses for multiple platforms, providing data in the following years when it is needed the most. FY 99 New Start Program

Schedule: N/A

Technical: N/A

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
7 - Operational System Development										
(U) C. Other Program Funding Summary (\$ in Thousands)										
PE NUMBER AND TITLE										
0305099F Global Air Traffic Management (GATM)										
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost	
(U) Aircraft Procurement, AF, BA-7, C-5 Mods, Avionics Modernization Program, PE 0401119F				107,761	59,942	127,779	111,260	189,353	596,095	
(U) RDT&E, AF, BA-7, Avionics Modernization Program, PE 0401119F, C-5 Airlift Squadrons		9,751	48,904		3,028	2,147	1,086		58,655	
(U) Aircraft Procurement, AF, BA-7, AFSOC VHF Integration, PE 0404011F									6,261	
(U) Aircraft Procurement, AF, BA-7, VC-25, PE 0401314F			5,447	9,000		1,000	1,000		16,447	
(U) Aircraft Procurement, AF, BA-7, KC-135, PE 0401218F			78,000	137,000	168,000	166,000	209,000		758,000	
(U) Aircraft Procurement, AF, BA-7, KC-10, PE 040219F			19,847	25,896	27,091	32,470	18,300		123,604	
(U) Aircraft Procurement, AF, BA-7, E-3, PE 0207417F			3,000					TBD	TBD	
(U) Aircraft Procurement, AF, BA-7, E-4, PE 0302015F			7,000					TBD	TBD	
(U) Aircraft Procurement, AF, BA-7, C-21, PE 0401314F			43,300	34,120	35,160			TBD	TBD	
(U) Aircraft Procurement, AF, BA-7, Other, GATO/MC2 SPO, PE 0305099F	1,800								1,800	
(U) Aircraft Procurement, AF, BA-7, C-32, PE 0401314F				8,700		6,000			14,700	
(U) Aircraft Procurement, AF, BA-7, C-9, PE 0401314F			3,910	20,050	14,350	23,900	13,130	110	75,450	
(U) Aircraft Procurement, AF, BA-7, C-20, PE 0401314F			3,340	25,350	50	7,600	10,200		46,540	
(U) Aircraft Procurement, AF, BA-7, C-141, PE 0401119F			18,200	1,800					20,000	

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305099F Global Air Traffic Management (GATM)

**(U) D. Schedule Profile**

<u>FY 1997</u>	3
2	

1

(U) GATM (See individual R-2 exhibits for schedule profiles)

(U) VHF Integration (See individual R-2 exhibits for schedule profiles)

<u>FY 1997</u>	3
2	

1

2	<u>FY 1998</u>	3
---	----------------	---

—

4

	FY 1999	3
--	---------	---

10

1

1

	FY 1999	3
--	---------	---

10

1

1

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305099F Global Air Traffic Management (GATM)								4689	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4689	Global Access Architecture	0	0	24,899	6,637	8,750	9,776	7,806	TBD	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**  
**4689: Global Air Traffic Management:** This effort supports global air traffic operations through the development and acquisition of aviation equipment that will meet the DoD mission and comply with appropriate civil standards. This project will ensure interoperability between multiple platforms and air traffic control functions within the DoD and Federal Aviation Administration (FAA). Common system engineering support, architecture analyses and evaluations will address the requirements of the special operations fleet, fighters, uninhabited air vehicles, common flight management systems, and special mission aircraft. The Global Air Traffic Operations / Mobility Command and Control (GATOMC2) System Program Office (SPO) will assist the Major Commands (MAJCOMs) in the development of operational architectures to meet evolving GATM requirements. The SPO will develop and maintain an acquisition master plan addressing performance, schedule, and cost of various aircraft and C2 programs. In addition, this project will formulate a product catalog providing MAJCOMs and SPOs a readily available source of certifiable common GATM systems to allow a rapid acquisition of the necessary equipment and logistics support. This project supports the definition of requirements for ACAT III projects across multiple weapon systems. Funding was sharply increased in FY99 in recognition of need to perform architectural analyses. This endeavor consists of low technical risk system engineering efforts supporting fielded weapon systems, utilizing Commercial Off-The-Shelf (COTS) and Non-Developmental Items (NDI), and is assigned to Budget Activity 7, Operational Systems Development.

(U) FY 1997 (\$ in Thousands):  
 - (U) \$ 0 Total

(U) FY 1998 (\$ in Thousands):  
 - (U) \$ 0 Total

(U) FY 1999 (\$ in Thousands):  
 - (U) \$ 4,698 Continue system architecture analyses and evaluations for the various platforms  
 - (U) \$ 9,357 Begin development of common system architectures  
 - (U) \$ 8,625 Initiate miniaturization and modular system prototype developments  
 - (U) \$ 2,219 Begin GPS/NAVWAR integration evaluations  
 - (U) \$24,899 Total

Project 4689

Page 5 of 15 Pages

Exhibit R-2 (PE 0305099F)

1547

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
7 - Operational System Development	0305099F Global Air Traffic Management (GATM)	February 1998	4689
(U) B. <u>Program Change Summary (\$ in Thousands)</u>			
(U) Previous President's Budget (FY1998)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	0	0	0
(U) Adjustments to Appropriated Value			
a. Congressional/General Reductions			
b. SBIR			
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming			
e. Rescissions			
(U) Adjustments to Budget Years Since FY1998 PB			
(U) Current Budget Submit/1999 President's Budget	0	0	24,899
			24,899
(U) Change Summary Explanation:			
Funding: FY97 reprogramming was approved by Congress and is not reflected in these numbers. It includes a \$3,036K increase to support the development of a common architecture for Communication, Navigation, Surveillance / Air Traffic Management (CNS/ATM) requirements. Common system engineering support included \$27,056K in FY99. Such a large investment in one year attempts to accomplish architectural analyses for multiple platforms, providing data in the following years when it is needed the most. FY99 New Start Program			
Schedule:	N/A		
Technical:	N/A		
Project 4689		Exhibit R-2 (PE 0305099F)	
Page 6 of 15 Pages		1548	

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT
7 - Operational System Development		0305099F Global Air Traffic Management (GATM)										4689
(U) C. Other Program Funding Summary (\$ in Thousands)												
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost		
(U) Aircraft Procurement, AF, BA-7, C-5 Mods, Avionics Modernization Program, PE 0401119F					107,761	59,942	127,779	111,260	189,353	596,095		
(U) RDT&E, AF, BA-7, Avionics Modernization Program, PE 0401119F, C-5 Airlift Squadrons			9,751	48,904						58,655		
(U) Aircraft Procurement, AF, BA-7, AFSOC VHF Integration, PE 0404011F						3,028	2,147	1,086		6,261		
(U) Aircraft Procurement, AF, BA-7, VC-25, PE 0401314F				5,447	9,000		1,000	1,000		16,447		
(U) Aircraft Procurement, AF, BA-7, KC-135, PE 0401218F				78,000	137,000	168,000	166,000	209,000		758,000		
(U) Aircraft Procurement, AF, BA-7, KC-10, PE 040219F				19,847	25,896	27,091	32,470	18,300		123,604		
(U) Aircraft Procurement, AF, BA-7, E-3, PE 0207417F				3,000					TBD	TBD		
(U) Aircraft Procurement, AF, BA-7, E-4, PE 0302015F				7,000					TBD	TBD		
(U) Aircraft Procurement, AF, BA-7, C-21, PE 0401314F				43,300								
(U) Aircraft Procurement, AF, BA-7, Other, GATO/MC2 SPO, 0305099F			1,800							1,800		
(U) Aircraft Procurement, AF, BA-7, C-32, PE 0401314F						8,700	6,000			14,700		
(U) Aircraft Procurement, AF, BA-7, C-9, PE 0401314F				3,910	20,050	14,350	23,900	13,130	110	75,450		
(U) Aircraft Procurement, AF, BA-7, C-20, PE 0401314F				3,340	25,350	50	7,600	10,200		46,540		
(U) Aircraft Procurement, AF, BA-7, C-141, PE 0401119F				18,200	1,800					20,000		

Project 4689

Page 7 of 15 Pages

Exhibit R-2 (PE 0305099F)

Project 4689

Page 7 of 15 Pages

Exhibit R-2 (PE 0305099F)

1549

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
7 - Operational System Development	0305099F Global Air Traffic Management (GATM)	4689		
(U) D. <u>Schedule Profile</u>				
		FY 1997	FY 1998	FY 1999
1		2 3 4 1 2	2 3 4 1 2	2 3 4
(U) Development of Common System Architectures				X
(U) Miniaturization and Modular System Prototype Development				X

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305099F Global Air Traffic Management (GATM)

4689

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Prototypes/System Developments			8,625
(U) Common System Architecture Analyses			2,483
(U) Common System Architecture Development			9,357
(U) Systems Engineering/Technical Support			1,918
(U) GPS/NA VWAR Integration Evaluations			2,219
(U) Program Management Support			240
(U) Travel			57
(U) Total	0	0	24,899

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations: Not applicable</u>										
<u>Support and Management Organizations</u>										
ESC	TBD							24,899	TBD	TBD
<u>Test and Evaluation Organizations</u>										
TBD	TBD							TBD	TBD	TBD

Project 4689

Page 9 of 15 Pages

Exhibit R-3 (PE 0305099F)

1551

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305099F Global Air Traffic Management (GATM)								4689	
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)											
Government Furnished Property: None											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
Subtotal Product Development								24,899	TBD	TBD	
Subtotal Support and Management								TBD	TBD	TBD	
Subtotal Test and Evaluation											
Total Project					0	0	0	24,899	TBD	TBD	

Project 4689

Page 10 of 15 Pages

Exhibit R-3 (PE 0305099F)

1552

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305099F Global Air Traffic Management (GATM)

4690

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4690 VHF Integration	0	0	2,157	11,518	1,945	0	0	0	15,620
Quantity of RDT&E Articles	0	0	0	1*	0	0	0	0	1*

\* Mod kit not separately priced.

(U) A. Mission Description and Budget Item Justification

4690: VHF Integration: Program integrates VHF communications and navigation equipment onto the MC-130H Combat Talon II aircraft to comply with changing airspace access criteria. Project investigates cost-effective solutions such as integration of Multi Mode Receiver (MMR) and modification of the Very High Frequency (VHF) military radio to add 8.33 kHz channel spacing capability. The MMR may incorporate a Microwave Landing System (MLS), Protected Instrument Landing System and Differential Global Positioning System. These modifications would enable the MC-130H and other AFSOC aircraft to comply with changing International Civil Aviation Organization (ICAO) airspace access criteria. Effort includes engineering design work, mod kit design, and kit proofing. The MC-130H and other Special Operations Forces (SOF) aircraft have software that is highly unique and specialized. Modification of the software will involve changing the code, testing the changes, and updating software documentation and maintenance technical orders. This program will develop mission essential capability for fielded weapon systems and is assigned Budget Activity 7, Operational Systems Development.

(U) FY 1997 (\$ in Thousands):

- (U) \$ 0 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$ 0 Total

(U) FY 1999 (\$ in Thousands):

- (U)	1,157	Systems engineering
- (U)	700	Software engineering
- (U)	300	Management and Support
- (U)	\$ 2,157	Total

Project 4690

Page 11 of 15 Pages

Exhibit R-2 (PE 0305099F)

1553

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
7 - Operational System Development	0305099F Global Air Traffic Management (GATM)		4690
(U) B. Program Change Summary (\$ in Thousands)			
(U) Previous President's Budget (FY1998)		FY 1997	FY 1998
(U) Appropriated Value		0	0
(U) Adjustments to Appropriated Value			
a. Congressional/General Reductions			
b. SBIR			
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming			
e. Rescissions			
(U) Adjustments to Budget Years Since FY1998 PB			
(U) Current Budget Submit/1999 President's Budget		0	0
(U) Change Summary Explanation:			
Funding: FY 99 New Start Program			
Schedule: N/A			
Technical: N/A			
			Total Cost
			0
			0
			2,157
			2,157
			15,620

Project 4690

Page 12 of 15 Pages

Exhibit R-2 (PE 0305099F)

1554

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305099F Global Air Traffic Management (GATM)

4690

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
(U) Aircraft Procurement, AF, Special Operations Forces, PE 0404011F					3,028	2,147	1,086	0	6,261

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
1	2	3	4	1	4	2	3	4
(U) Contract Award					1			
(U) PDR					X			
(U) CDR							X	
(U) First Article Testing (2Q/00)								X
(U) Begin Kit Production (3Q/00)								

Project 4690

Page 13 of 15 Pages

Exhibit R-2 (PE 0305099F)

1555

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
7 - Operational System Development		0305099F Global Air Traffic Management (GATM)			February 1998 4690
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) Software engineering				700	
(U) System engineering				1,157	
(U) Management and Support				300	
(U) Total		0	0	2,157	
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
<u>Performing Organizations:</u>					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
<u>Product Development Organizations</u>					
IWSSP Contractor	TBD	Dec 98		6,807	0
					0
				1,857	11,763
					13,620
<u>Support and Management Organizations</u>					
WR-ALC/LU	TBD			100	800
ASC/LU	TBD			200	900
					1,100
<u>Test and Evaluation Organizations</u>					
TBD				TBD	TBD
				TBD	TBD
				TBD	TBD

Project 4690

Page 14 of 15 Pages

Exhibit R-3 (PE 0305099F)

Project 4690

Page 14 of 15 Pages

Exhibit R-3 (PE 0305099F)

1556

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			4690	
7 - Operational System Development		0305099F Global Air Traffic Management (GATM)				
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)						
Government Furnished Property: Government will provide VHF radios and Multi Mode Receivers to the contractor.						
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998
						Budget to Complete
						Total Program
Product Development Property						TBD
TBD						
Support and Management Property						TBD
TBD						
Test and Evaluation Property						TBD
TBD						
Subtotal Product Development					1,857	11,763
Subtotal Support and Management					300	1,700
Subtotal Test and Evaluation					TBD	TBD
Total Project				0	0	13,463
					2,157	15,620

Project 4690

Page 15 of 15 Pages

Exhibit R-3 (PE 0305099F)

Project 4690

Page 15 of 15 Pages

Exhibit R-3 (PE 0305099F)

1557

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305110F

PE TITLE: Satellite Control Network (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305110F Satellite Control Network (Space)								3276	
COST (\$ in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
3276	Satellite Control Network	67,804	73,496	56,622	100,645	101,383	98,404	94,640	Continuing	Continuing	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	
<p><b>(U) A. Mission Description and Budget Item Justification</b></p> <p>(U) The Air Force Satellite Control Network (AFSCN) mission is to fly operational USAF and other DoD satellites. The AFSCN also provides launch &amp; early orbit tracking operations in support of all major US launches. Air Force Space Command (AFSPC) performs operations and maintenance and Air Force Materiel Command (AFMC) performs modernization and sustainment of the system to meet requirements validated by a HQ USAF approved Operational Requirements Document (ORD). This effort funds the development and acquisition of this integrated national satellite telemetry, tracking, commanding, and data relay capability to meet the requirements of the growing inventory of operational and developmental DoD, National, Civil, and foreign satellite systems. Improvement and Modernization efforts in command &amp; control, communications, and range elements of the AFSCN will ensure DoD space systems are operationally ready to support the CINCs' warfighting requirements.</p> <p>(U) The AFSCN consists of four segments: Command &amp; Control, Communications, Range, and Support. The system is a global infrastructure of control centers, remote tracking stations, and communications links that provide the highly reliable command and control, communications, and range systems required to support the nation's surveillance, navigation, communications, and weather satellite operations. The AFSCN is the DoD common user network that provides satellite state-of-health, tracking, telemetry, and commanding (TT&amp;C) for the following operational satellite systems: DMSP, GPS, DSCS, DSP, FLTSAT, MILSTAR, UHF F/O, Skynet, NATO II/IV, and Classified Programs.</p> <p>(U) AFSCN Improvement and Modernization (I&amp;M): AFSCN I&amp;M is an on-going program of replacements and upgrades which will replace non-standard, unsupportable equipment with more reliable, maintainable and standardized hardware and software. This new equipment will enable AFSPC satellite operations to be performed with fewer, lower skilled personnel and will significantly reduce hardware/software maintenance costs. The principal efforts within this program are: Network Operations Upgrades (Command &amp; Control System Upgrades), Communications Upgrades, and Range Upgrades.</p> <p>(U) NETWORK OPERATIONS UPGRADES: The current Resource Management System (RMS), which deconflicts and allocates network telemetry, tracking &amp; command assets to support operational space vehicles, will be replaced with an automated, Year 2000-compliant system which includes network resource scheduling and orbit analysis functions to include ephemeris and events generation, radio frequency interference detection and collision avoidance. This evolution offers tremendous potential for reducing satellite control O&amp;M costs through enhanced commonality and standardization, simplified operations, and automation. Commercial off-the-shelf (COTS) hardware and software will be procured for the new Resource Management System. The software portions will be modified to meet AFSPC's operational requirements.</p> <p>(U) COMMUNICATIONS UPGRADES: This effort will transition the current, costly point-to-point AFSCN communications network to a communications grid system that integrates government and commercial networks as technology becomes available. Several standardization efforts are being implemented to improve and modernize the</p>											

Project 3276

Page 1 of 8 Pages

Exhibit R-2 (PE 0305110F)

1559

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
7 - Operational System Development	0305110F Satellite Control Network (Space)		3276
<p>communications and ground segment elements of the AFSCN, including: Archival recording systems to replace obsolete, manpower-intensive analog equipment with automated, standardized digital COTS systems; a Centralized Control and Monitor (CC&amp;M) system which will consolidate communications operations, provide remote control of tracking station equipment, and increase fault detection and isolation capabilities to reduce O&amp;M costs; Wide Area Network Interface Units (WANIU) which standardize hardware and reduce O&amp;M costs for performing multiplexing functions in the AFSCN, as well as provide an Asynchronous Transfer Mode (ATM) interface; and Operational Switch Replacement (OSR) to provide increased capacity, reliability, data quality, and user access.</p> <p>(U) RANGE UPGRADES: This effort will upgrade the current Automated Remote Tracking Station (ARTS) and other Range assets. Several integrated projects will standardize the remote tracking stations, upgrade and/or replace outdated equipment in order to reduce failures, correct operational deficiencies, and reduce operating and sustainment costs.</p> <p>(U) This effort is in Budget Activity 7, Operational System Development, because it supports a fielded system.</p> <p>(U) ACQUISITION STRATEGY: The primary objective of the AFSCN I&amp;M program is to reduce the cost of satellite control operations while maintaining or improving reliability, maintainability, operability, and capability of current systems. A combination of performance-based specifications and commercial/industrial specifications and standards was used for these acquisitions and was tailored to state only the Government's minimum performance needs. All development contracts were competitively awarded and utilized commercial practices and streamlining to the maximum extent possible.</p> <p>The AFSCN utilized multiple development contracts in the past. Starting in FY96, a new streamlined contracting strategy was implemented with the award of three new contracts. The new strategy resulted in the Range &amp; Communications Development Contract (RCDC), the Network Operations Upgrade Contract (NOUC), and the Network Integration Contract (NIC). Integration efforts had previously been spread across functional and contracting lines; but with the new AFSCN contracting strategy, the NIC contractor will be responsible for inter-segment integration. Development upgrades will be designed to be flexible in meeting new satellite program requirements while minimizing sustainment costs by taking advantage of development efforts in satellite control over a large number of government and non-government development activities. It is believed that these objectives can best be reached by developing systems with an open software design and a distributed system architecture using COTS products wherever feasible.</p>			

Project 3276

Page 2 of 8 Pages

Exhibit R-2 (PE 0305110F)

1560

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## February 1998

PE NUMBER AND TITLE

0305110F Satellite Control Network (Space)

**3276**

	(U) FY 1997 (\$ in Thousands)	(U) Network Operations Upgrades (Command and Control System Upgrades):
	\$22,349	

(U)	\$22,349	<b>Network Operations Upgrades (Command and Control System Upgrades):</b>
-----	----------	---------------------------------------------------------------------------

(U) Continued software development of Resource Scheduling, Basic Orbit Service

sustain an early schedule input and dissemination capability until RMS delivery. Initiated effort to move the primary orbit analysis functions of RMS to Falcon AFB for use by the Inter-Range Operations organization. Continued development of the common HMI and the common satellite control architecture and its underlying requirements base. Initiated effort to standardize satellite operations training for all AFSPC satellite control systems. Continued developing priority user-requested modifications to command and control systems.

(U) \$32,266 **Communications Upgrades:**

(U) Continued supporting hardware and software integration of standardized COTS archival recorder units at Remote Tracking Stations (RTS).

Continued development of WANIU and began operational testing of prototype in AFSCN. Continued CC&M development. Continued Operational Switch Replacement studies and requirements analysis.

(U) \$11,189 Network Integration and Systems Engineering:

(U) Continued system engineering and integration of hardware/software to meet evolving satellite program requirements at Operational Control Nodes (OCNs) and RTSs.

(U) \$2,000 Approved Below Threshold Reprogramming

(U) Funds have been identified to support Combat Survivor Evader Locator (CSEL).

(U) \$67,804 Total

(U) FY 1998 (\$ in Thousands)

(U)	\$20,423	Network Operations Upgrades (Command and Control System Upgrades):
(U)		

(U) Develop, test, and field Resource Scheduling, Basic Orbit Service, Control and Status, and Network Performance capabilities in primary locations. Begin implementation of additional orbit service capabilities into RMS. Complete common HMI and common satellite control architecture study to finish SSCS effort and make results available to satellite SPOs.

(U) **\$33,908 Communications Upgrades:**

(U) Continue supporting hardware and software installation of standardized COTS archival recorder units at RTSS. Continue development, integration, and test of WANIUS into the AFSCN. Complete CC&M development and deliver baseline system. Begin development of Operational Switch Replacement.

(U) \$12.167 Network Integration and Systems Engineering:

(U) Continue system engineering and integration of hardware/software to meet evolving satellite program requirements at OCNs and RTSS;

(U) \$6,998 Approved Below Threshold Reprogramming:

**Funds have been identified to support Combat Survivor Evader Locator (CSEL) and Global Positioning System (GPS) III modernization.**

(U) \$73,496 **Total**

(U) FY 1999 (\$ in Thousands)

Project 3276

Page 3 of 8 Pages

Exhibit R-2 (PE 0305110F)

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
<b>7 - Operational System Development</b>	<b>0305110F Satellite Control Network (Space)</b>		<b>3276</b>
(U) \$5,544	<u>Network Operations Upgrades (Command and Control System Upgrades):</u>		
(U) \$36,936	(U) Begin Resource Scheduling integration and test of orbit service at back-up operational location.		
(U) \$3,180	<u>Communications Upgrades:</u>		
	(U) Complete Archival Recorder System and CC&M development projects. Continue developing Operational Switch Replacement. Support WANIU installation at RTSs and OCNs.		
	<u>Range Upgrades:</u>		
(U) \$10,962	(U) Begin development of antenna upgrades. Current 1960's technology antennas are very expensive to maintain. Modern designs are available off-the-shelf to provide increased performance, reduced interference (required by FCC allocation of adjacent frequencies to Commercial users), and multi-frequency alternatives.		
(U) \$56,622	<u>Network Integration and Systems Engineering:</u>		
	(U) Continue system engineering an integration of hardware/software to meet evolving satellite program requirements at OCNs and RTSs.		
	<b>Total</b>		

Project 3276

Page 4 of 8 Pages

Exhibit R-2 (PE 0305110F)

1562

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305110F Satellite Control Network (Space)

3276

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	82,640	80,011	104,061	Continuing
(U) Appropriated Value	86,960	80,011		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-2,062	-4513		
b. SBIR	-2,258	-2002		
c. Omnibus and Other Above Threshold Reprogram	-14,000			
d. Below Threshold Reprogramming	-700			
e. Rescissions	-136			
(U) Adjustments to Budget Years since FY 1998 PB			-47,439	
(U) Current Budget Submit/1999 President's Budget	67,804	73,496	56,622	Continuing

## (U) Change Summary Explanation (\$ in Thousands):

Funding: The following FY97 and FY98 reprogrammings were accomplished after database lock and are not reflected in the amounts above: FY97 -- \$2,000 to support CSEL program; FY98 -- \$6,998 reprogrammed to support CSEL (\$1,999) and GPS modernization (\$4,999); FY99 adjustments fund higher Air Force and DoD priorities. Schedule: RC3M start delayed two years to FY00; C&S Processor start delayed two years to FY00

Technical: Development of Standard Satellite Control Subsystem (SSCS), a common core C2 upgrade for satellite control, was restructured and descoped, and will conclude in FY98; descoped antenna upgrades effort in identification and implementation of improved ranging and modulation techniques.

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement, AF; Budget Activity: 03;	7,237	22,459	26,007	23,987	32,658	40,850	41,771	Continue	Continue
P-65; AFSCN									

Related RDT&E:

(U) Not Applicable.

Project 3276

Page 5 of 8 Pages

Exhibit R-2 (PE 0305110F)

1563

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		DATE		PROJECT					
7 - Operational System Development		February 1998		3276					
(U) D. <u>Schedule Profile</u>		PE NUMBER AND TITLE		0305110F Satellite Control Network (Space)					
		FY 1997		FY 1998		FY 1999			
1		2	3	4	1	2	3	4	
<u>Communications Upgrades</u>									
Archival CDR			X						
RTS archival IOC					X				
CC&M CDR			X						
CC&M IOC					X				
WANIU CDR				X					
OSR CDR					X				
<u>Network Operations Upgrades</u>									
Resource Management CDR			X						
Resource Management IOC						X			
<u>Range Upgrades</u>									
Start antenna upgrades						X			

Project 3276

Page 6 of 8 Pages

Exhibit R-2 (PE 0305110F)

1564

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305110F Satellite Control Network (Space)

3276

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Network Ops Upgrades (Command and Control Upgrades)	22,349	20,423	5,544
(U) Communications Upgrades	32,266	33,908	36,936
(U) Range Upgrades	0	0	3,180
(U) Network Integration and Systems Engineering	11,189	12,167	10,962
(U) Approved Below Threshold Reprogramming	2,000	6,998	0
(U) Total	67,804	73,496	56,622

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC*	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	To Complete	Total Program
<u>Product Development Organizations</u>										
Multiple	Multiple	Multiple	72,296	72,296	72,296	0	0	0	0	72,296
Lockheed Martin	C/CPAF	Mar 96	94,004	175,140	72,296	32,266	33,908	36,936	continuing	continuing
Lockheed Martin	C/CPAF	Apr 96	52,258	118,400	72,296	22,349	20,423	5,544	continuing	continuing
Range Upgrades	TBD	TBD	205,057	205,057	72,296	0	0	3,180	continuing	continuing
Lockheed Martin	C/CPAF	May 96	66,700	74,050	72,296	11,189	12,167	10,962	continuing	continuing

\*Only includes projections/options exercised to date

Support and Management Organizations

N/A

Test and Evaluation Organizations

N/A

Project 3276

Page 7 of 8 Pages

Exhibit R-3 (PE 0305110F)

1565

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE		February 1998					
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT						
7 - Operational System Development		0305110F Satellite Control Network (Space)			3276						
	Performing Activity	Project Office	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	To Complete	Total Program			
Government Furnished Property: N/A											
	Subtotal Product Development			285,258	644,943	72,296	65,804	66,498	56,622	continuing	continuing
	Subtotal Support and Management										
	Subtotal Test and Evaluation										
	Subtotal Reprogramming			285,258	644,943	72,296	2,000	6,998			
	Total Project						67,804	73,496	56,622	continuing	continuing

Project 3276

Page 8 of 8 Pages

Exhibit R-3 (PE 0305110F)

Project 3276

Page 8 of 8 Pages

Exhibit R-3 (PE 0305110F)

1566

UNCLASSIFIED

PE NUMBER: 0305111F  
PE TITLE: Weather Service

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305111F Weather Service								2738	
COST (\$ in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
2738	Weather Service	4,801	8,411	10,649	13,634	11,670	11,824	12,045	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**  
(U) This program provides for the modification, sustainment, and acquisition of meteorological hardware and software needed to support the observing and forecasting needs of worldwide Air Force and Army operations, as well as Special Operation Forces (SOF) and other government agency support. Efforts include: (a) Cloud Depiction and Forecast System II (CDFS II), replaces logistically unsupportable mainframe computers at the Air Force Weather Agency (AFWA), Offutt AFB and upgrades satellite data processing, cloud depiction and forecasting, and classified weather support functions for operational commanders and national programs; (b) Global Theater Weather Analysis and Prediction System (GTWAPS), acquires theater weather models and associated hardware to improve the AFWA theater support capabilities; (c) Tactical Weather Radar (TWR), provides lightweight, portable Doppler weather radar to support deployed combat operations worldwide; (d) Space Weather Analysis and Forecast System (SWAFS), replaces aging 55th Space Weather Squadron (55SWXS, AFSPC) hardware and software to move to an open, efficient computing environment; (e) Meteorological Operations Capability (MOC), which builds upon weather systems successfully integrated into operational C4I systems and supports the "train as you fight" concept by assuring fixed and deployable systems are the same. (f) Satellite Data Handling System II (SDHS II) will retrieve satellite data and meteorological fields from a centralized data base to a graphical user interface capable of 3-D and 4-D visualization. Provides operators and commanders better situational awareness of conditions in their operating environment and battlespace. This effort is in Budget Activity 7, Operational System Development, because it supports software development and system tests associated with the upgrade and replacement of currently operational systems, systems already in production, and systems with approved production funds in the DoD budget.

(U) **Acquisition Strategy:**  
All major contracts within this Program Element were awarded after full and open competition.

(U) **FY 1997 (\$ in Thousands):**  
- (U) 2,977 CDFS II: Continued development of cloud depiction and forecast software, prepare for FY98 production/integration contract award.  
- (U) 1,599 GTWAPS: Milestone decision (3QFY97) and awarded development contract (1FY98).  
- (U) 225 SWAFS: Prepared Milestone I/II/III documentation  
- (U) 4,801 Total

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998
7 - Operational System Development	0305111F Weather Service	PROJECT 2738
<p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <p>- (U) 4,658 CDFS II: Continue to create, rewrite and host software modules.</p> <p>- (U) 2,861 GTWAPS: Continue software development for IOC 1.</p> <p>- (U) 654 TWR: Milestone I/III documentation.</p> <p>- (U) 238 MOC: Prepare and conduct Milestone I/III for forecast system.</p> <p>- (U) 8,411 Total</p> <p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <p>- (U) 5,505 CDFS II: Continue development of cloud depiction and forecast software.</p> <p>- (U) 1,967 GTWAPS: Continue software development for incremental IOCs.</p> <p>- (U) 250 TWR: SPO support.</p> <p>- (U) 2,587 MOC: Begin software development for forecast system. Prepare documentation for MS I/III for observing system.</p> <p>- (U) 340 SDHS II: Assessment of operational alternative study.</p> <p>- (U) 10,649 Total</p>		
Project 2738		Exhibit R-2 (PE 0305111F)
Page 2 of 6 Pages		1568

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305111F Weather Service

2738

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Cont.
(U) Previous President's Budget (FY 1998 BP)	4,919	9,057	8,424	
(U) Appropriated Value	5,126	9,057		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-132	-490		
b. SBIR	-85	-156		
c. Omnibus or Other Above Threshold Reprogramming	0			
d. Below Threshold Reprogramming	-100			
e. Rescissions	-8			
(U) Adjustments to Budget Years Since FY 1998 PB			2,225	
(U) Current Budget Submit/FY1999 President's Budget	4,801	8,411	10,649	Cont.

## (U) Change Summary Explanation:

Funding: FY 99 change is due to transfer from other procurement to RDT&amp;E. (\$2,439).

Schedule: None.

Technical: None.

Project 2738

Page 3 of 6 Pages

Exhibit R-2 (PE 0305111F)

1569

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305111F Weather Service								2738	
(U) C. Other Program Funding Summary (\$ in Thousands)											
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont.	Total Cost Cont.	
(U) Other Procurement, AF (35111F WSC 833070)		17,643	21,256	18,581	26,591	27,536	29,309	28,101			
Only includes procurement funds for investment programs described in this R-2 Exhibit.											
<u>Related RDT&amp;E:</u>											
(U) PE #603707F, Weather Systems Advanced Development											
(U) PE #602601F, Phillips Lab Exploratory Development											
(U) PE #305160F, Defense Meteorological Satellite Program											
(U) PE #603434F, National Polar-orbiting Operational Environmental Satellite System											
(U) PE #207438F, Theater Battle Management C4I											
(U) PE #208006F Air Force Mission Planning System											
(U) D. Schedule Profile											
(U) CWS TFS Software Complete		1	2	3	4	1	2	3	4		
(U) GTWAPS Milestone I/II/III		X									
(U) TWR Milestone I/II											
(U) MOC Milestone I/II											
(U) SWAFS Milestone I/II/III										X	

Project 2738

Page 4 of 6 Pages

Exhibit R-2 (PE 0305111F)

1570

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

7 - Operational System Development

PE NUMBER AND TITLE

0305111F Weather Service

2738

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) 1st Article Development	0	525	100
(U) System Software Integration	214	285	66
(U) System Engineering Support	799	798	842
(U) Contractor Engineering Support	485	452	899
(U) Software Development	3,004	5,095	7,552
(U) Travel	78	101	140
(U) Program Management Support	231	1155	1050
(U) Laboratory Support	0	0	0
(U) Total	4,801	8,411	10,649

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Phillips Lab	MIPR	May 94	270	270	270	0	0	0	0	270
CalTech	LOE	Jun 94	1,172	1,172	1,172	0	0	0	0	1,172
CSC	LOE	Jan 94	2,127	2,127	2,127	0	0	0	0	2,127
GTE	FFP/PR	Oct 90	13,064	13,064	13,064	0	0	0	0	13,064
PRISM (Raytheon)	LOE	Jan 93	3,497	3,497	3,497	0	0	0	0	3,497
PRISM (Hughes)	LOE	Jan 93	3,396	3,396	3,121	0	275	0	0	3,396
Sterling	CPAF	Jun 95	17,196	17,196	4,600	3,186	4,180	5,230	0	17,196

Project 2738

Page 5 of 6 Pages

Exhibit R-3 (PE 0305111F)

1571

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										2738		
7 - Operational System Development										0305111F Weather Service		
Contractor or Contract										PE NUMBER AND TITLE		
Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Air Weather Svc (CDFS II related work)	MIPR	4FY95	EAC 2,900	EAC 2,900	2,900	0	0	0	0	2,900		
Hughes DNA	MIPR	Sep 95 Jan 95	1,682 100	1,682 100	1,682 100	0 0	0 0	0 0	0 0	1,682 100		
CCPL/ESC TRW	LOE FFP	1FY98 Dec 97	TBD 3,370	TBD 3,370	0 0	0 0	396 1,953	2,052 1,417	Cont. 0	Cont 3,370		
Support and Management Organizations												
Electronic Systems Center (ESC)					632	520	1,050	871	Cont	Cont		
Space and Missile Center (SMC)					0	192	105	180	Cont	Cont		
MITRE/ Aerospace TEMS					1009	903	452	899	Cont	Cont		
Test and Evaluation Organizations												
Not Applicable												
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)												
Government Furnished Property: Not Applicable												
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total Project												

Page 6 of 6 Pages

1572

UNCLASSIFIED

PE NUMBER: 0305114F

UNCLASSIFIED

PE TITLE: Air Traffic Cntrl/Approach/Landing Sys (ATCALS)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE							
BUDGET ACTIVITY		February 1998							
7 - Operational System Development		0305114F Air Traffic Cntrl/Approach/Landing Sys (ATCALS)							
PE NUMBER AND TITLE									
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	7,337	5,928	4,729	6,989	5,580	5,636	5,752	Continuing	TBD
2026 System Support	374	70	273	246	259	244	253	Continuing	TBD
3587 Precision Landing Development	6,963	5,858	4,456	6,743	5,321	5,392	5,499	Continuing	TBD
Quantity of RDT&E Articles	10/200	0	0	0	0	0	0	0	10/200

(U) **A. Mission Description and Budget Item Justification**  
 This effort was originally established for development of Military Microwave Landing System Avionics (MMLSA) and acquisition of the commercially developed Commercial Microwave Landing System Avionics (CMLSA). It was part of a twenty-year program to transition Air Force operations from the use of Precision Approach Radar (PAR) and Instrument Landing System (ILS) to the Microwave Landing System (MLS) for precision approach and landing. With termination of the MLS as the national precision landing standard, the effort is now being redirected to develop a replacement box for ILS avionics to sustain precision landing capability until the follow-on capability is chosen. The current Air Force ILS receivers do not meet the new specification required by the International Civil Aviation Organization (ICAO) for protection from interference problems forecast to occur after 1998. This program will accomplish an Analysis of Alternatives (AOA) for the Joint Precision Approach and Landing System (JPALS) program which will result in identification of the follow-on to the ILS and PAR systems. This program will also fund continuing studies to obtain an autonomous precision landing capability, and air traffic control studies under Global Access, Navigation, and Safety (GANS) efforts. Project 2026 funds ongoing liaison and interagency cooperative studies, between the USAF Air Traffic Control (ATC) and Landing Systems (ATCALS) program office and various organizations to include other Services, the Federal Aviation Administration (FAA) and ICAO. This program is in budget activity 7 - Operational System Development, because it upgrades avionics in currently fielded weapon systems.

(U) **Acquisition Strategy:** Engineering Manufacturing Development, Fixed Price Incentive Fee (FPIF), No Non-Developmental Items (NDI)

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALs)

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Total Cost TBD
(U) Previous President's Budget (FY 1998 PB)	7,643	6,571	925	
(U) Appropriated Value	3,870	13,471		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-129	-536		
b. SBIR	-97	-332		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	3,706			
e. Recissions	-13			
f. Other		-6,675		
(U) Adjustments to Budget Years Since FY 1997 PB			3,804	
(U) Current Budget Submit/FY 1999 President's Budget	7,337	5,928	4,729	TBD

## (U) Change Summary Explanation:

Funding: FY97 reprogramming includes a \$3,900 increase for additional Precision Landing System development in support of the C-17 Combat Mission Need Statement and a \$293 decrease to pay FY1988 cancelled bills for this program element. \$6.675M in FY98 is pending reprogramming to Other Procurement for air traffic control simulators. Funding increase of \$3.8M in FY99 is for air traffic control projects under Global, Access, Navigation, and Safety efforts.

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	To Compl cont	Total Cost TBD
(U) Aircraft Procurement AF Budget Activity 5, Weapon System Code 3587	147	148							

UNCLASSIFIED

## DATE February 1998

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

**0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALS)**

**(U) D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
1	2	4	1
	3	3	3
4			

**(U) Acquisition Milestones:**

(U) Contract Milestones

(U) Initial Tower Restoral Vehicle  
(TRV) Delivery

X

(U) Test and Evaluation Milestones  
TRV First Article Complete  
TRV Operational Testing

X



**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0305114F Air Traffic Cntrl/Approach/Landing Sys (ATCALS)

PROJECT 2026

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
	COST (\$ In Thousands)									
2026	System Support	374	70	273	246	259	244	253	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	Continuing	TBD

(U) A. Mission Description and Budget Item Justification

This continuing effort funds ongoing liaison and interagency cooperative studies, as well as interoperability analyses between the USAF Air Traffic Control and Landing Systems (ATCALS) program office and various organizations which include the other services, the Federal Aviation Administration (FAA), and the International Civil Aviation Organization (ICAO). Continues mission support for the ATCALS programs including several joint efforts with the FAA. RDT&E funds are used to resolve or minimize technical interface problems associated with interoperability between existing or planned DoD/FAA ATCALS equipment and capabilities.

(U) FY 1997 (\$ in Thousands):

- (U) \$ 67 Provided support for all ATCALS projects

- (U) \$ 181 Continued interoperability and interface evaluations

- (U) \$ 126 Provided support for the portable precision landing system studies for the Joint Special Operations Command (JSOC)

- (U) \$ 374 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$ 10 Support for all ATCALS projects

- (U) \$ 50 Conduct interoperability and interface evaluations

- (U) \$ 10 Support for the precision landing system studies for the Joint Special Operations Command (JSOC)

- (U) \$ 70 Total

Project 2026

Page 4 of 13 Pages

Exhibit R-2 (PE 0305114F)

1576

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALs)

PROJECT

7 - Operational System Development

2026

(U) FY 1999 (\$ in Thousands):

- (U) \$ 95 Support for all Air Traffic Control and Landing Systems (ATCALs) projects
- (U) \$120 Conduct interoperability and interface evaluations
- (U) \$ 58 Support for the precision landing system studies for the Joint Special Operations Command (JSOC)
- (U) \$273 Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget (FY 1998 PB)	374	267	279	
(U) Appropriated Value	423			
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-49	-244		
b. SBIR		-178		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Recissions				
f. Other (BRS Adjustment)		-6,675		
(U) Adjustments to Budget Years Since FY 1998 PB			-6	
(U) Current Budget Submit/FY 1999 President's Budget	374	70	273	Continuing

(U) Change Summary Explanation:  
Funding: Programmatic adjustments

Schedule: N/A

Technical: N/A

Project 2026

Page 5 of 13 Pages

Exhibit R-2 (PE 0305114F)

1577

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE (ATCALS)	PROJECT 2026	
<b>7 - Operational System Development</b>			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>			
None.			
(U) D. <u>Schedule Profile</u>			
		FY 1997	FY 1998
		1	2
		3	4
		1	2
		3	4
		1	2
		3	4
(U) Acquisition Milestones N/A			
(U) Contract Milestone			
(U) Initial Tower Restoral Vehicle (TRV) Delivery			
(U) Test and Evaluation Milestones			
(U) Operational Testing Complete			
(U) First Article Testing Complete			
(U) Conduct Precision Landing Studies			

Project 2026

Page 6 of 13 Pages

Exhibit R-2 (PE 0305114F)

1578

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305114F Air Traffic Cntrl/Approach/Landing Sys

2026

(ATCALs)

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Engineering	80	40	151
(U) Contract Engineering	129	20	100
(U) Test and Evaluation Support	120	0	0
(U) Program Management Support	20	5	12
(U) Travel	25	5	10
(U) Total	374	70	273

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

**Performing Organizations:** AFMC, ESC, Hanscom AFB, MA manages the overall ATCALs effort. MITRE Corporation, Bedford, MA, provides technical engineering support

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997		Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
					FY 1997	FY 1997				
Product Development Organizations:										
None						0				
Support and Management Organizations										
Various	Multiple	N/A			948	374	70	273	TBD	TBD
Test and Evaluation Organizations										
N/A:	N/A	N/A	0	0	0	0	0	0	0	0

Project 2026

Page 7 of 13 Pages

Exhibit R-3 (PE 0305114F)

1579

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY					
7 - Operational System Development					
PE NUMBER AND TITLE					
0305114F Air Traffic Cntrl/Approach/Landing Sys (ATCALS)				2026	
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)					
Government Furnished Property:					
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total	
				Budget FY 1997	Budget FY 1997
Product Development Property N/A					
Support and Management Property N/A					
Test and Evaluation Property N/A					
Subtotal Product Development				0	0
Subtotal Support and Management				948	70
Subtotal Test and Evaluation				0	0
Total Project				948	70

Project 2026

Page 8 of 13 Pages

Exhibit R-3 (PE 0305114F)

Project 2026

Page 8 of 13 Pages

Exhibit R-3 (PE 0305114F)

1580

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305114F Air Traffic Cntrl/Approach/Landing Sys

3587

(ATCAL\$)

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3587 Precision Landing Development	6,963	5,858	4,456	6,743	5,321	5,392	5,499	Continuing	TBD
Quantity of RDT&E Articles	10/200	0	0	0	0	0	0	0	10/200

(U) A. Mission Description and Budget Item Justification

DoD and the Department of Transportation (DOT) have a goal to develop and acquire a common civil/military precision approach and landing system that is capable of operating with Category I, II, or III signal guidance accuracy. The International Civil Aviation Organization (ICAO) and NATO designated worldwide implementation for PLS for January 1998 with Microwave Landing System (MLS) as the standard. Due to the emergence of the Global Positioning System (GPS), as a more cost effective solution, the Air Force's precision landing development has been redirected to develop a replacement box for the Instrument Landing System (ILS) to support a precision landing capability until GPS becomes available. The replacement box capability will allow DoD to meet the ICAO requirements for FM frequency protection. This is especially critical in Europe where there is a high density of FM radio stations. The Air Force has worldwide deployment commitments and large numbers of aircraft must comply with the ICAO Standards and recommended practices. In FY97, the Air Force began a new effort to install the precision landing system receiver on its C-17 aircraft to solve short-term operational deficiencies. FY96/97 funding also accomplished an Analysis of Alternatives (AOA) for the Joint Precision Approach and Landing System (JPALS) program. The primary objective of the AOA is to conduct a comprehensive evaluation of precision landing alternatives in the context of relevant scenarios and user requirements, and to recommend a preferred solution(s) to replace ILS and precision approach radar systems.

## (U) FY 1997 (\$ in Thousands):

- (U) \$2,513 Began development of a precision landing capability to include Differential GPS
- (U) \$451 Performed platform integration and system engineering analyses
- (U) \$3,999 Began work on Air Mobility Command (AMC) Precision Approach Capability (PAC) (includes cost of RDT&E articles)
- (U) \$6,963 Total

Project 3587

Page 9 of 13 Pages

Exhibit R-2 (PE 0305114F)

1581

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALS)

## 7 - Operational System Development

PROJECT  
3587

## (U) FY 1998 (\$ in Thousands):

(U) \$865 Continue development of a precision landing capability to include Differential GPS  
 (U) \$113 Perform platform integration and system engineering analyses  
 (U) \$208 Begin Precision Landing System (PLS) flight certification  
 (U) \$4,672 Joint Precision Approach and Landing System (JPALS)  
 (U) \$5,858 Total

## (U) FY 1999 (\$ in Thousands):

(U) \$105 Continue to perform platform integration and system engineering analyses  
 (U) \$451 Continue PLS flight certification  
 (U) \$3,900 Begin air traffic control work under Global Access, Navigation, and Safety (GANS) effort  
 (U) \$4,456 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998 PB)	7,269	6,304	646	
(U) Appropriated Value	3,447			
(U) Adjustments to Appropriated Value				
a. Congressional Reduction	-80	-292		
b. SBIR	-97	-154		
c. Omnibus or Other Above Threshold Reprogram				
d. BTRs	3705			
e. Recissions	-13			
(U) Adjustments to Budget Years Since FY 1998 PB			3,810	
(U) Current Budget Submit/FY 1999 President's Budget	6,963	5,858	4,456	TBD

Project 3587

Page 10 of 13 Pages

Exhibit R-2 (PE 0305114F)

1582

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALs)

PROJECT

3587

## (U) Change Summary Explanation:

Funding: FY97 reprogramming includes a \$3,900 increase to support additional Precision Landing System development in support of the C-17 Combat Mission Need Statement and a \$293 decrease to pay FY1988 cancelled bills for this program element. Funding increase of \$3.8M in FY99 is for air traffic control related projects under Global Access, Navigation, and Safety (GANS).

Schedule: N/A

Technical: N/A

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl cont	Total Cost TBD
(U) Aircraft Procurement AF Budget Activity 5, Weapon System Code 3587	147	148	0	0	0	0	0		

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
(U) Acquisition Milestones:	1	2	3	4	1	4	1	2
(U) Contract Milestones								3
(U) Contract Award (GCA-2000)								4
(U) Delivery of 1 <sup>st</sup> System								
(U) C-17 Precision Landing System								
Receiver Contract Modification								
(U) Test and Evaluation Milestones M/A								

Project 3587

Page 11 of 13 Pages

Exhibit R-2 (PE 0305114F)

1583

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALs)
PROJECT  
3587

### (U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Primary Hardware Development	2,513	865	269
(U) Test and Evaluation Support		95	85
(U) Engineering/Technical Support	202	190	170
(U) Avionics Integration Efforts	149		
(U) Program Management Support	70	20	20
(U) Analysis of Alternatives (JPALS)		4,672	
(U) AMC PAC	3,999		
(U) ATC Related GANS Programs			3,900
(U) Travel	30	16	12
(U) Total	6,963	5,858	4,456

### (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

#### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
GEC Marconi-Hazeltine	FPIF	Jun 93	19,400	19,400	9,300	5,300	865	500	Continue	TBD
<u>Support and Management Organizations</u>										
Various	Multiple	Multiple	N/A	N/A		1,521	4,993	4,046	Continue	TBD
<u>Test and Evaluation Organizations</u>										
FAA Test Center	MIPR	May 97			0	142	0	0	0	142

Project 3587

Page 12 of 13 Pages

Exhibit R-3 (PE 0305114F)

1584

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305114F Air Traffic Cntrl/Approach/Landing Sys  
(ATCALS)

3587

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

## Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget	Budget	Budget	Budget to	Total Program
					FY 1997	FY 1998	FY 1999	Complete	

Product Development Property: N/A

Support and Management Property: N/A

Test and Evaluation Property: N/A

Subtotal Product Development	9,300	5,300	865	500	Continue
Subtotal Support and Management		1,521	993	3,956	Continue
Subtotal Test and Evaluation		142	0	0	
Total Project	9,300	6,963	5,858	4,456	Continue

Project 3587

Page 13 of 13 Pages

Exhibit R-3 (PE 0305114F)

1585

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305119F

PE TITLE: Medium Launch Vehicles (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305119F Medium Launch Vehicles (Space)								624A	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
624A	Medium Launch Vehicle	10,999	5,130	7,375	8,009	7,992	5,374	2,040	0	430,139	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**  
National Security requirements dictate a continuing, highly reliable means of placing critical Department of Defense (DoD) satellites into required orbits. Assured access to space, directed by the President in the National Security Launch Strategy, will be accomplished through the use of a robust mix of Expendable Launch Vehicles (ELVs). The Medium Launch Vehicle (MLV) program provides sustainment, procurement and launch of DoD ELVs, including Atlas II and Delta II at Cape Canaveral AS, FL and at Vandenberg AFB, CA. The MLV launches the Defense Satellite Communication System (DSCS) and the Global Positioning System (GPS) satellites. The RDT&E budget for MLV primarily consists of engineering support for system performance upgrades to both the vehicles and the launch facilities, new payload integration, sustaining engineering, and post-flight assessment to maintain the high reliability of the launch vehicles. In addition, testing associated with the 17 Jan 97 mishap of a Delta II booster is included. This program is in Budget Activity 7, Operational Systems Development, because the Medium Launch Vehicles program is in full production and fully operational.

**B. Acquisition Strategy:**  
The MLV program is in final production and consists of two distinct medium launch vehicles: Atlas IIA and the Delta II. Funding for the production of the Atlas Air Force program has been completed, and the remaining Air Force requirements are primarily for the remaining DSCS mission's launch services on the Lockheed Martin Atlas production contract. The Delta II program primarily consists of launching replenishment satellites for the Global Positioning System (GPS). Final production procurement is planned for FY99, with advance procurement in FY98, on the existing Boeing production contract. The MLV program is scheduled to start transitioning to EELV beginning with FY02 launches.

(U) FY 1997: (\$in thousands)

-	(U) \$ 4,673	Base support and environmental programs
-	(U) \$ 960	West Coast Atlas II activation
-	(U) \$ 0	DSCS integration
-	(U) \$ 2,796	Delta II range facilities upgrades
-	(U) \$ 2,570	Sustaining engineering and mission support for MLV launch facilities, infrastructure, and launch operations for launch complexes 3, 17, and 36
-	(U) \$10,999	Total

Project 624A

Page 1 of 5 Pages

Exhibit R-2 (PE 0305119F)

Project 624A

Page 1 of 5 Pages

Exhibit R-2 (PE 0305119F)

1587

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
BUDGET ACTIVITY	February 1998	
7 - Operational System Development		PROJECT 624A
PE NUMBER AND TITLE		
0305119F Medium Launch Vehicles (Space)		
(U) FY 1998: (\$ in thousands)		
- (U) \$ 0	West Coast Atlas II activation continues	
- (U) \$ 300	DSCS integration	
- (U) \$ 844	Delta II range required facilities upgrade	
- (U) \$ 632	Delta II systems integration	
- (U) \$ 3,354	Sustaining engineering and mission support for MLV launch facilities, infrastructure, and launch operations for launch complexes 3, 17, and 36	
- (U) \$ 5,130	Total	
(U) FY 1999: (\$ in thousands)		
- (U) \$ 0	West Coast Atlas II activation continues	
- (U) \$ 300	DSCS integration	
- (U) \$ 500	Delta II range required facilities upgrade	
- (U) \$ 0	Delta II systems integration	
- (U) \$ 6,575	Sustaining engineering and mission support for MLV launch facilities, infrastructure, and launch operations for launch complexes 3, 17, and 36	
- (U) \$ 7,375	Total	
(U) B. Program Change Summary (\$ in Thousands)		
(U) Previous President's Budget (FY1998 PB)	FY 1997	FY 1999
(U) Appropriated Value	12,720	14,623
(U) Adjustments to Appropriated Value	13,368	5,719
a. Congressional Gen Reductions	-347	-478
b. SBIR	-301	-111
c. Omnibus or Other Above Threshold Reprogram	-1700	
d. Below Threshold Reprogramming		
e. Rescissions	-21	
(U) Adjustments to Budget Years Since FY 1998 PB		-7,248
(U) Current Budget Submit/FY1999 President's Budget	10,999	7,375
		430,139
(U) Change Summary Explanation:		
Funding: FY 1999 adjustments reflect reduction of funds for Atlas/DSCS integration as DSCS Service Life Extension Program satellites will remain within weight limits.		
Project 624A		Exhibit R-2 (PE 0305119F)

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305119F Medium Launch Vehicles (Space)

624A

Schedule: Not Applicable  
 Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
(U) Missile Procurement, Air Force (PE35119F) (BA45, P-25/26)	154,651	201,799	188,406	72,742	55,741	36,921	10,794	0	2,620,893

Related RDT&E: None(U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999				
	1	2	3	1	2	3	4	1	2	3	4
(U) Delta/GPS Launches		X	X						X	X	
(U) Delta/STP Launches							XX				XX
(U) Atlas/DSCS Launches							X				
(U) Atlas West Coast Pad Activation				X							X

Project 624A

Page 3 of 5 Pages

Exhibit R-2 (PE 0305119F)

1589

UNCLASSIFIED



## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

PE NUMBER AND TITLE

### 0305119F Medium Launch Vehicles (Space)

**624A**

Exhibit R-3 (PE 0305119F)

**UNCLASSIFIED**

**UNCLASSIFIED**

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT
7 - Operational System Development		0305119F Medium Launch Vehicles (Space)										624A
Contractor or	Contract	Method/Type or	Award or	Performing	Project	Total	Budget	Budget	Budget	Budget to	Total	
Government	Funding		Obligation	Activity	Office	Prior to	FY 1997	FY 1998	FY 1999	Complete	Program	
Performing	Vehicle		Date	EAC	EAC	FY 1997						
Activity	FFP		FY94	N/A	N/A	563	118	0	0	0	681	
Other Ktr Sup												
Vandenberg Sup	Various		Various	N/A	N/A	2,430	960	0	0	0	3,390	
Environment/	Various		Various	N/A	N/A	5,606	0	0	0	0	5,606	
Safety												
Test and Evaluation Organizations												
Not Applicable												
Government Furnished Property: Not Applicable												
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total Project												

Project 624A

Page 5 of 5 Pages

Exhibit R-3 (PE 0305119F)

1591

**UNCLASSIFIED**

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305128F

UNCLASSIFIED

PE TITLE: Security and Investigative Activities (S&amp;IA)

BUDGET ACTIVITY		PE NUMBER AND TITLE										DATE	
7 - Operational System Development		0305128F Security and Investigative Activities (S&IA)										February 1998	
RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		PROJECT										1931	
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost				
1931 TECH SURVEIL COUNTER MEAS EQPT	275	3,325*	458	474	480	483	487	0	TBD				
Quantity of RDT&E Articles	1	0	2	1	1	1	1						

\* Cost of test articles embedded in overall project cost; breakout not available. FY98 amount is pending reclassification of funds to PE 33140F.

**(U) A. Mission Description and Budget Item Justification**  
 This program funds 70% of the Air Force Office of Special Investigations' (AFOSI) manpower and operations and maintenance costs, as well as 100% of its procurement and research and development costs. AFOSI conducts specialized investigative activities and force protection support for Air Force (AF) commanders worldwide. This assists AF commanders in protecting their people and resources. AFOSI's mission includes investigating criminal matters affecting AF personnel, contract fraud and economic crimes involving AF weapons systems and spare parts, the investigation of environmental crime, counterdrugs, computer intrusion detection and forensic media analysis of computer crimes. This element supports Technical Surveillance Countermeasures (TSCM), Computer Crime Investigations (CCI), and technical support to criminal and counterintelligence investigations and operations conducted by AFOSI. AFOSI's TSCM mission provides security assessments to both AF and DoD facilities and programs. The purpose of CCI research is to improve AF and DoD Information Operations capability by enhancing AFOSI's ability to deter or prevent spies, hackers, or saboteurs from manipulating, damaging, or stealing sensitive war fighting data or systems. Failing that, to investigate, identify, and prosecute those who do. While most research to meet operational requirements is Operational System Development, there is also research in the category of Engineering and Manufacturing Development due to a need for modifications to present technology.

The equipment required to provide technical support to investigations is unique and complex. This equipment must be continually updated to provide state-of-the-art capabilities to detect and neutralize criminal activities targeted against the AF and DoD. In an era of advancing technology, reduced manning, and increasingly high level fraud, environmental crime and computer crime investigations, technical investigative equipment must be continuously updated to enable AFOSI special agents to have the most cost effective and best possible means of thwarting criminal acts. The evolution of a new wave of computer crimes has made AFOSI responsible for the collection, investigative analysis, national level law enforcement coordination, and dissemination of hacker activity and intrusion incidents for the Air Force. AFOSI's computer crime equipment must stay on the leading edge of technology to collect criminal information as well as pursue and apprehend criminals through a global medium. There were 2800 computer security violations and/or intrusion incidents reported to AFOSI in 1996. AFOSI must continually update its existing high tech computer surveillance equipment to support ongoing and future investigative operations to identify hackers and hacker groups, as well as potential hostile government activities targeting Air Force communication and control systems. This program is in Budget Activity 7, Operational System Development, because its products are primarily for use in investigative activity of an operational nature.

**(U) Acquisition Strategy:**  
 All major contracts within this Program Element were awarded via sole source contract due to the sensitivity of technologies involved.

Project 1931

Page 1 of 6 Pages

Exhibit R-2 (PE 0305128F)

1593

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
7 - Operational System Development	0305128F Security and Investigative Activities (S&IA)		1931
(U) FY 1997 (\$ in Thousands):			
- (U) \$164	TSCM Receiver/Software Suite. Demonstration of TSCM Receiver Suite		
- (U) \$100	TSCM Receiver/Software Suite. Validation of TSCM Receiver Suite		
- (U) \$ 11	Telephone/Computer Local Area Network (LAN) Analyzer. Demonstration and validation of countermeasure units for field applications		
- (U) \$275	Total		
(U) FY 1998 (\$ in Thousands):			
- (U) \$ 480	Telephone/Computer LAN Analyzer. Demonstration and validation of upgraded software		
- (U) \$ 500	Computer Crimes Investigative (CCI) Equipment. RDT&E of CCI software		
- (U) \$ 461	Linux Media Analysis Platform. RDT&E of Linux Media Analysis Platform		
- (U) \$1,884	Reclassification to PE 33140F (Pending)		
- (U) \$3,325	Total		
(U) FY 1999 (\$ in Thousands):			
- (U) \$250	Telephone/Computer LAN Analyzer. Demonstration and validation of upgraded software		
- (U) \$ 67	Computer Crimes Investigative (CCI) Equipment. RDT&E of CCI software		
- (U) \$141	Ground Penetrating Radar/Millimeter Wave Equipment. Demonstration and validation of millimeter wave technology		
- (U) \$458	Total		
Project 1931			
Page 2 of 6 Pages			
Exhibit R-2 (PE 0305128F)			

1594

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305128F Security and Investigative Activities  
(S&IA)

PROJECT

1931

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY1998 PB)	275	530	467	TBD
(U) Appropriated Value	289	3,530		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-6	-115		
b. SBIR	-8	-90		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-9	
(U) Current Budget Submit/FY1999 President's Budget	275	3,325	458	TBD

## (U) Change Summary Explanation:

Funding: FY98 amount is pending reclassification of funds to PE 33140F.

Schedule: None.

Technical: None.

Project 1931

Page 3 of 6 Pages

Exhibit R-2 (PE 0305128F)

1595

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY								DATE	PROJECT
7 - Operational System Development								February 1998	1931
(U) C. Other Program Funding Summary (\$ in Thousands)								PE NUMBER AND TITLE	
0305128F Security and Investigative Activities (S&IA)									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl TBD	Total Cost TBD
Automatic Data Processing Equipment	190	95	91	0	0	191	191	0	TBD
Radio Equipment	421	0	0	0	0	0	0	0	421
Base Communication Infrastructure	0	414	0	0	0	0	0	0	414
Base Procured Equipment	100	0	0	0	0	0	0	0	100
Technical Surveillance Countermeasures Equipment	1060	1952	2035	3020	3049	2876	2877	0	TBD
BA63/Security & Investigative Activities/PE0305128F									
(U) D. Schedule Profile									
	FY 1997			FY 1998		FY 1999			
(U) TSCM Receiver/Software Suite	1	4	1	2	4	2	4		
(U) Telephone/Computer LAN Analyzer	2	3		3	1	3			
(U) CCI Equipment	X	X							
(U) Linux Media Analysis Platform	X			X					
(U) Millimeter Wave Equipment				X		X	X		
Project 1931									
Page 4 of 6 Pages								Exhibit R-2 (PE 0305128F)	

1596

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

7 - Operational System Development

0305128F Security and Investigative Activities

1931

PE NUMBER AND TITLE

(S&amp;IA)

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Primary Hardware Development	204	211	204
(U) Software Development	71	1,230	254
(U) Reclassification to PE 33140F	0	1,884	0
(U) Total	275	3,325	458

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	FY 1998	FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Matrix Engineering	SS/FFP	Feb 97	N/A	N/A	130	264	0	0	0	394
S.T. Research Corp.	SS/FFP	Mar 97	N/A	N/A	152	11	480	250	TBD	893
TBD	SS/FFP	Mar 98	N/A	N/A	0	0	500	67	TBD	567
TBD	SS/FFP	Mar 98	N/A	N/A	0	0	461	0	0	461
TBD	SS/FFP	Mar 99	N/A	N/A	0	0	0	141	0	141

Support and Management Organizations:

None

Test and Evaluation Organizations:

None

Project 1931

Page 5 of 6 Pages

Exhibit R-3 (PE 0305128F)

1597

UNCLASSIFIED



**RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)**

February 1998

**PÉ NUMBER AND TITLE**

**0305128F Security and Investigative Activities (S&IA)**

PROJECT  
1931

Government Performing <u>Activity</u>	Method/Type or Funding <u>Vehicle</u>	Award or Obligation <u>Date</u>	Performing Activity EAC	Project Office EAC
---------------------------------------------	---------------------------------------------	---------------------------------------	-------------------------------	--------------------------

Award or Obligation Date	Amount	Source	Comments
12/1/2010	100000	State of New York	...

Project  
Office  
EAC

Performing Activity	EAC
------------------------	-----

Total  
Prior to  
FY 1997

Budget to Complete	Total Program
100	100
90	90
80	80
70	70
60	60
50	50
40	40
30	30
20	20
10	10
0	0

**Total  
Program**

None

None

None

None

Subtotal Support and Management

### Subtotal Test and Evaluation

Reclassification to PE 33140F (Pending)

**Total Project**

\* Due to the small size and narrow scope of these efforts there are no funds expended for Support Cost and Management Services. Similarly, Test and Evaluation costs are embedded in Product Development.

Project 1931

Page 6 of 6 Pages

1598

Exhibit R-3 (PE 0305128F)

**UNCLASSIFIED**

PE NUMBER: 0305137F

UNCLASSIFIED

PE TITLE: National Airspace System

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT	
7 - Operational System Development		0305137F National Airspace System							February 1998	4090	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4090	National Airspace System (NAS)	11,818	11,917	1,881	288	205	207	211	436	108,798	
	Quantity of RDT&E Articles	4**	2**	0	0	0	0	0	0	0	

(U) Note: \* Cost of RDT&E articles (\$3.4 Million in FY97) includes three (3) voice switch configurations and one (1) automation subsystem to support developmental/operational testing.  
 \*\* Cost of RDT&E articles (\$3.0 Million in FY98) includes two (2) automation subsystems to support developmental/operational testing.

(U) A. **Mission Description and Budget Item Justification:**  
 The DoD National Airspace System program will modernize the DoD Air Traffic Control (ATC) system in parallel with the Federal Aviation Administration (FAA) modernization. DoD will acquire, to the maximum extent practical, systems on contract with the FAA to reduce development costs and prevent duplication. The DoD NAS program provides systems and facilities compatible/interoperable with the FAA modernization, prevents DoD flight delays and cancellations, continues DoD's access into Special Use Airspace (SUA), provides transparent services to military and civil aircraft, replaces aging DoD ATC systems, and increases flight safety. The Military Airspace Management System (MAMS) will effectively schedule and manage SUA. DoD military ATC and fighting/flying readiness will be maintained. This program is in budget activity 7 - Operational System Development, because the DoD Air Traffic Control system is operational.

(U) **Acquisition Strategy:**  
 All major contracts were awarded after full and open competition. Adjustments to funding of specific activities reflect realignment of development/test activities with the revised (27 Feb 97) Acquisition Program Baseline (APB) and amended (30 Jun 97) Acquisition Decision Memorandum (ADM).

(U) **FY 1997 (\$ in Thousands):**

-	(U)	1,805	Continued Military Airspace Management System (MAMS) development
-	(U)	1,318	Continued site surveys, facility/transition planning
-	(U)	325	Continued NAS DoD subsystem analysis for each DoD site
-	(U)	3,280	Continued radar acquisition and test
-	(U)	3,290	Continued automation acquisition and test
-	(U)	1,800	Continued voice switch acquisition and test
-	(U)	\$11,818	Total

Project 4090

Page 1 of 6 Pages

Exhibit R-2 (PE 0305137F)

1599

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development 0305137F National Airspace System

PROJECT  
4090

## (U) FY 1998 (\$ in Thousands):

- (U) 4,400	Complete Military Airspace Management System (MAMS) development
- (U) 137	Complete facility/transition planning and continue site surveys
- (U) 455	Continue NAS DoD subsystem analysis for each DoD site
- (U) 2,535	Continue radar acquisition and test
- (U) 4,190	Continue automation acquisition and test
- (U) 200	Complete voice switch acquisition and test
- (U) \$11,917	Total

## (U) FY 1999 (\$ in Thousands):

- (U) 316	Continue site surveys
- (U) 600	Complete NAS DoD subsystem analysis for each DoD site
- (U) 965	Complete radar and automation acquisition and test
- (U) \$1,881	Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	11,858	12,830	1,919	108,798
(U) Appropriated Value	12,614	12,830		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions	-477	-687		
b. SBIR	-279	-226		
c. Omnibus & Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming	-20			
e. Rescissions	-20			
(U) Adjustments to Budget Year Since FY 1998 PB			-38	
(U) Current Budget Submit/1999 President's Budget	11,818	11,917	1,881	108,798

Project 4090

Page 2 of 6 Pages

Exhibit R-2 (PE 0305137F)

1600

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998						
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT						
7 - Operational System Development	0305137F National Airspace System		4090						
(U) Change Summary Explanation:									
Funding: Changes reflected in the table above.									
Schedule: Adjustments of specific activities reflect realignment of development/test activities with the revised (27 Feb 97) Acquisition Program Baseline (APB) and amended (30 Jun 97) Acquisition Decision Memorandum (ADM).									
Technical: No Change.									
(U) C. Other Program Funding Summary (\$ in Thousands)									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Cont	Total Cost TBD
(U) Other Procurement, BA 16	0	16,192	45,308	50,519	51,529	57,526	46,508		
Weapon system code 833020, PE0305137F									
(U) Other Procurement, BA16	0	1,009	5,639	6,973	8,067	9,190	6,472	Cont	TBD
Weapon system code 86190A, PE0305137F, (Initial Spares)									

Project 4090

Page 3 of 6 Pages

Exhibit R-2 (PE 0305137F)

1601

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE \_\_\_\_\_

February 1998

### BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

**0305137F National Airspace System**

PROJECT  
4090

**(U) D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
	1 2 3 4	1 2 3 4	1 2 3 4
(U) Acquisition Milestones			
(U) Milestone II (MS II) (Jul 95)			
(U) Revised Acquisition Program Baseline	X		
(U) Amended MS II Acquisition Decision Memo			
(U) Radar & Automation LRIP Decision			
(U) Voice Switch Procurement Decision			
(U) Radar & Automation Milestone III			
(U) Contract Milestones			
(U) Radar			
Contract Award (Aug 96)			
Complete radar IOT&E			
(U) Automation			
Contract Award ( Sep 96)			
Complete automation IOT&E			
(U) Voice Switch			
Contract Award (Jul 95)			
Complete voice switch IOT&E			
(U) NAS IOC Apr 2000			
(U) NAS FOC Apr 2006			
(U) MAMS			
Contract Award (Nov 95)			
Began Initial Usability Assessment			
MAMS IOC			

Project 4090

Page 4 of 6 Pages

**Exhibit R-2 (PE 0305137F)**

1602

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305137F National Airspace System

4090

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Software Development	1,805	4,400	0
Site Surveys	290	100	100
Facility/Transition Planning	290	37	0
Integration/Interface Planning	50	50	0
System Engineering	682	340	551
Primary Hardware Test and Evaluation	8,370	6,725	965
Program Management Support	281	215	215
Travel	50	50	50
Total	11,818	11,917	1,881

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
a. Computer Based Systems	CPAF	Jun 94	3,500	3,500	3,500	0	0	0	0	3,500
b. Hughes Aircraft	CPFF	Nov 95	12,705	12,705	6,500	1,805	4,400	0	0	12,705
c. Raytheon (Radar)	IDIQ - FFP	Aug 96	18,356	18,356	16,449	967	940	0	0	18,356
d. Raytheon (Automation)	IDIQ-FFP	Sep 96	5,862	5,862	0	2,292	3,005	565	0	5,862
e. Denro	IDIQ-FFP	Jul 95	2,570	2,570	1,462	1,108	0	0	0	2,570

Project 4090

Page 5 of 6 Pages

Exhibit R-3 (PE 0305137F)

1603

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY			PE NUMBER AND TITLE								4090	
7 - Operational System Development			0305137F National Airspace System									
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Support and Management Organizations												
MITRE	CPAF	Oct 94	21,910	21,910	17,300	2,900	1,210	500	0	21,910		
Martin Marietta	FFP	Sep 94	8,700	8,700	7,514	822	364	0	0	8,700		
Miscellaneous	Multiple	Multiple	32,624	32,624	28,575	1,224	1,398	516	1,347	33,060		
Test and Evaluation Organization												
46 <sup>th</sup> Test Wing, Eglin AFB, FL	PO	Multiple	2,135	2,135	535	700	600	300	0	2,135		
Government Furnished Property: None												
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total Project												

Project 4090

Page 6 of 6 Pages

Exhibit R-3 (PE 0305137F)

Project 4090

Page 6 of 6 Pages

Exhibit R-3 (PE 0305137F)

1604

UNCLASSIFIED

PE NUMBER: 0305138F

UNCLASSIFIED

PE TITLE: Upper Stage Space Vehicles (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305138F Upper Stage Space Vehicles (Space)								4053	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4053	Upper Stage Space Vehicles	1,505	3,150	558	1,920	1,863	12	0	0	25,868	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**  
 (U) The Upper Stages Program provides consolidated acquisition of the Inertial Upper Stage (IUS) to support the launch of Defense Support Program (DSP) satellites. IUS is an upper stage on the Titan IV (can be modified for Shuttle) and delivers the DSP satellite to the required orbit. The RDT&E program continuously evaluates and improves upper stage reliability, cost effectiveness, and responsiveness. It supports redesign of aging equipment and spares which are no longer manufactured or available; investigation of flight anomalies; and small studies to assist in defining future upper stages. This program is categorized in Budget Activity 7, Operational Systems Development, because the Inertial Upper Stage Program is in the production phase and is fully operational.

(U) **Acquisition Strategy:** Program is in final production under the fourth production contract. The components for the four remaining IUS units are procured and are in storage. The remaining procurement effort is for upper stage buildup, replacement parts, and component shelf life extension. Within the RDT&E budget for IUS, Avionics Obsolescence Activity (AOA) will replace obsolete, insupportable guidance, navigation and control system. The third part of the strategy involves the integration and launch services, flight operations, and post-flight analysis. The final portion of the strategy is the independent validation and verification of the IUS software.

(U) **FY 1997: (\$ in thousands)**  
 - (U) \$ 303 Study and design corrective actions for anomalies and obsolete items  
 - (U) \$ 0 Avionics Obsolescence Mitigation (approved by Congress for Omnibus source)  
 - (U) \$1,202 Program Management Support Activities  
 - (U) \$1,505 Total

(U) **FY 1998: (\$ in thousands)**  
 - (U) \$ 350 Study and design corrective actions for anomalies and obsolete items  
 - (U) \$ 0 Avionics Obsolescence Mitigation  
 - (U) \$ 0 Program Management Support Activities  
 - (U) \$ 2,800 Reprogrammed to higher Air Force priority (CSEL and GBS)  
 - (U) \$ 3,150 Total

Project 4053

Page 1 of 5 Pages

Exhibit R-2 (PE 0305138F)

1605

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
<b>7 - Operational System Development</b>	<b>0305138F Upper Stage Space Vehicles (Space)</b>	<b>4053</b>	
(U) FY 1999: (\$ in thousands)			
(U) \$ 558 Study and design corrective actions for anomalies and obsolete items			
(U) \$ 0 Avionics Obsolescence Mitigation			
(U) \$ 0 Program Management Support Activities			
(U) \$ 558 Total			
<b>(U) B. Program Change Summary (\$ in Thousands)</b>			
(U) Previous President's Budget (FY1998 PB)		FY 1997	FY 1998
(U) Appropriated Value		3,010	3,337
(U) Adjustments to Appropriated Value		3,154	3,337
a. Cong Gen Reductions		-70	-117
b. SBIR		-74	-70
c. Omnibus or Other Above Threshold Reprogram		-1,000	
d. Below Threshold Reprogramming (BTR)		-500	
e. Rescissions		-5	
(U) Adjustments to Budget Years Since FY98 PB			0
(U) Current Budget Submit/FY1999 President's Budget		1,505	*3,150
(U) Change Summary Explanation:			-2,811
			558
			25,868
<p>Funding: *FY 1998: \$1.0M has been below threshold reprogrammed to Combat Survivor Evader Locator (CSEL) program and \$1.8M is currently pending approval for above threshold reprogramming to Global Broadcasting System (GBS).</p> <p>FY 1999 reflects reductions to program management support and anomaly resolution because of high system performance and reliability.</p> <p>Schedule: Not Applicable</p> <p>Technical: Not Applicable</p>			

Project 4053

Page 2 of 5 Pages

Exhibit R-2 (PE 0305138F)

1606

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE					DATE	February 1998	
7 - Operational System Development		0305138F Upper Stage Space Vehicles (Space)					PROJECT 4053		
(U) C. Other Program Funding Summary (\$ in Thousands)									
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Total
		17,088	47,042	48,012	46,827	44,393	28,008	0	Complete Cost
(U) Missile Procurement - (PE35138) (BA45, P-23)									0 231,370
<b>Related RDT&amp;E:</b>									
(U) PE 0305144F, Titan Vehicles									
(U) PE 0102431F, Defense Support Program (DSP)									
(U) Inertial Upper Stage (IUS) program supports the NASA Space Transportation System as an upper stage used with the Space Shuttle									
(U) D. <u>Schedule Profile</u>									
		FY 1997			FY 1998			FY 1999	
1		2 3	4	1	2 3	4	1	2 3	4
		X					X		
(U) DoD Launches									
(U) Avionics Replacement*									
(U) Integration, Launch Support, and Life Extension Modification*									
* Activities are continuous throughout the year.									

Project 4053

Page 3 of 5 Pages

Exhibit R-2 (PE 0305138F)

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305138F Upper Stage Space Vehicles (Space)								4053	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>											
		FY 1997	FY 1998	FY 1999							
(U)	Avionics Obsolescence Mitigation	0	0	0							
(U)	Program Management Support	1,202	0	0							
(U)	Systems Engineering	303	3,150	558							
(U)	Total	1,505	3,150	558							
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>											
<u>Performing Organizations:</u>											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
<u>Product Development Organizations</u>											
Boeing	SS/FPI/AF	Jul 85	906,671*	942,335*	6,148	0	0	0	0	6,148	
	SS/FPI/AF	Mar 91	151,189*	158,055*	1,991	259	0	0	0	2,250	
	SS/CPAF/LOE	Sep 90	N/A	N/A	4,064	0	0	0	0	4,064	
	SS/CPAF	Jun 97	N/A	N/A	N/A	44	3150	558	3795	7,547	
United Tech Corp/Pratt & Whitney	SS/CPFF	Mar 95	N/A	N/A	855	0	0	0	0	855	
* Amounts include funds used for IUS under previous Program Elements											
<u>Support and Management Organizations</u>											
Space and Missile Systems Center, LAAFB	N/A	N/A	N/A	N/A	3,802	1,202	0	0	0	5,004	
<u>Test and Evaluation Organizations</u> Not Applicable											
Project 4053											
Page 4 of 5 Pages											
Exhibit R-3 (PE 0305138F)											

1608

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998																																				
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																					
7 - Operational System Development	0305138F Upper Stage Space Vehicles (Space)	4053																																					
Government Furnished Property: Not Applicable																																							
	<table border="1"> <thead> <tr> <th>Total</th> <th>Budget FY 1997</th> <th>Budget FY 1998</th> <th>Budget FY 1999</th> <th>Budget to Complete</th> <th>Total Program</th> </tr> </thead> <tbody> <tr> <td>Prior to FY 1997</td> <td>13,058</td> <td>303</td> <td>3,150</td> <td>558</td> <td>20,864</td> </tr> <tr> <td>Subtotal Product Development</td> <td>3,802</td> <td>0</td> <td>0</td> <td>0</td> <td>5,004</td> </tr> <tr> <td>Subtotal Support and Management</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Subtotal Test and Evaluation</td> <td>16,860</td> <td>1,505</td> <td>3,150</td> <td>558</td> <td>25,868</td> </tr> <tr> <td>Total Project</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Total	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	Prior to FY 1997	13,058	303	3,150	558	20,864	Subtotal Product Development	3,802	0	0	0	5,004	Subtotal Support and Management	0	0	0	0	0	Subtotal Test and Evaluation	16,860	1,505	3,150	558	25,868	Total Project							
Total	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program																																		
Prior to FY 1997	13,058	303	3,150	558	20,864																																		
Subtotal Product Development	3,802	0	0	0	5,004																																		
Subtotal Support and Management	0	0	0	0	0																																		
Subtotal Test and Evaluation	16,860	1,505	3,150	558	25,868																																		
Total Project																																							
Project 4053		Exhibit R-3 (PE 0305138F)																																					

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305144F

PE TITLE: Titan Space Launch Vehicles (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305144F Titan Space Launch Vehicles (Space)								4135	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4135	Titan II/IV	77,702	70,483	87,443	44,185	40,495	18,454	11,665	0	3,116,410	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

(U) A. Mission Description and Budget Item Justification

(U) National security requirements dictate a continuing, highly reliable means of placing critical DoD satellites into required orbits. The Titan IV program provides the capability to launch the largest of these satellites into near-earth or geosynchronous orbits from either the east or west coast launch facilities. Titan IV is used to launch Air Force, National Reconnaissance Office, and NASA payloads. This program provides several different configurations of the Titan IV [No Upper Stage (NUS), Inertial Upper Stage (IUS), and Centaur]. In addition, the Titan IV program has developed a new vehicle configuration, the Titan IVB, with solid rocket motor upgrade (SRMU), new avionics and ground support equipment to meet reliability and increased performance requirements. This program provides continuing integration support to the payload community as well as continuing engineering support to maintain system characterization and reliability.

(U) Since FY94, this program element also included funding for sustaining engineering, payload integration, and Government costs for the Titan II space launch vehicle. This PE is in Budget Activity 7, Operational Systems Development, because both Titan II and Titan IV are operational launch vehicles. Major Titan IV effort remaining is SRMU recertification. Major activity is static test firing of SRMU in 1QFY00. Remaining activity is maintain sustaining engineering and anomaly resolution capability through the end of the program.

(U) Acquisition Strategy:

(U) The program has implemented a revised acquisition strategy for the entire 40-vehicle program. During FY1996, Titan IV transitioned from the old 41-vehicle development/production and payload integration contracts to new contracts designed to improve cost accountability, correct contract discrepancies, and establish an overall programmatic view for the effort to complete the program. The new contracts combine Titan II and Titan IV production, storage, pad maintenance and deactivation, launch operations, anomaly resolution, development and hardware requalification, payload integration, and program studies to provide the greatest potential for cost savings by maximizing use of resources and eliminating duplicative processes.

(U) FY 1997 (\$ in Thousands):

(U)	\$52,797	Titan Hardware Redesign and Requal (Solid Rocket Motor Upgrade (SRMU) and hardware obsolescence)
(U)	\$6,205	Continued integration for the Defense Support Program (DSP) and Milstar
(U)	\$18,700	Continued Titan Booster Support
(U)	\$77,702	Total

Project 4135

Page 1 of 5 Pages

Exhibit R-2 (PE 0305144F)

1611

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development		0305144F Titan Space Launch Vehicles (Space)		4135	
(U) FY 1998 (\$ in Thousands):					
-	(U) \$55,886	Titan Hardware Redesign and Requal (Solid Rocket Motor Upgrade (SRMU) and hardware obsolescence)			
-	(U) \$14,597	Continue integration for the DSP and Milstar			
-	(U) \$70,483	Total			
(U) FY 1999 (\$ in Thousands):					
-	(U) \$65,576	Titan Hardware Redesign and Requal (Solid Rocket Motor Upgrade (SRMU) and hardware obsolescence)			
-	(U) \$21,867	Continue integration for Milstar			
-	(U) \$87,443	Total			
(U) B. Program Change Summary (\$ in Thousands)					
(U)	Previous President's Budget (FY1998 PB)	FY 1997	FY 1998	FY 1999	Total Cost
(U)	Appropriated Value	97,487	82,384	137,602	3,320,678
(U)	Adjustments to Appropriated Value	102,472	74,884		
	a. Cong Gen Reductions	-2,403	-2,482		
	b. SBIR	-2,582	-1,919		
	c. Omnibus or Other Above Threshold Reprogram	-4,052			
	d. Below Threshold Reprogramming (BTR)	-15,579			
	e. Rescissions	-154			
(U)	Adjustments to Budget Years Since FY1998 PB			-50,159	
(U)	Current Budget Submit/ FY1999 President's Budget	77,702	70,483	87,443	3,116,410
(U) Change Summary Explanation:					
Funding: In FY97, \$15,579K was reprogrammed to fund higher priorities, and an additional \$750K is pending reprogramming to fund higher priorities. In FY98, \$10.48M is pending reprogramming to fund higher priorities. FY99 funds transfer put DSP recurring integration into the Titan Missile Procurement line. The restructure of the Titan 41-vehicle program to 40 vehicles caused reductions in FY99. Higher Air Force priorities also caused FY99 funding to be transferred from Titan to other programs.					
Schedule: Program has been curtailed to 40 vehicles under the restructure; last launch of Titan IV is scheduled for FY2004.					
Technical: No changes					

Project 4135

Page 2 of 5 Pages

Exhibit R-2 (PE 0305144F)

Project 4135

Page 2 of 5 Pages

Exhibit R-2 (PE 0305144F)

1612

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305144F Titan Space Launch Vehicles (Space)

4135

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Missile Procurement, Budget Activity 45, P-24, Space and Other Support	317,881	450,934	578,540	469,698	405,947	299,612	238,179	308,500	7,209,591

## Related RDT&amp;E:

(U) Not Applicable

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
(U) Draft Single Acquisition Management Plan (SAMP) to OSD staff	1	2	3	4	1	2	3	4
(U) 40-Vehicle Production and Launch Operations Contract Definition								
(U) Titan IV-B (SRMU) Initial Operational Capability (IOC)								
(U) Titan Development (Hardware Requal) Contract Definition								

Project 4135

Page 3 of 5 Pages

Exhibit R-2 (PE 0305144F)

1613

UNCLASSIFIED



## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

February 1998

## BUDGET ACTIVITY

0305144F Titan Space Launch Vehicles (Space)

4135

Facilities	SS/FP1F	1QFY85	11,110,900	11,203,100	2,206,317	0	0	0	0	2,206,317
LMC 85-C-0019	SS/FP1F	1QFY85	11,110,900	11,203,100	2,206,317	0	0	0	0	2,206,317
LMC 85-C-0085	SS/FP1F	1QFY85	638,600	638,600	82,067	0	0	0	0	82,067
LMC 92-C-0028	SS/CPAF	3QFY92	594,422	585,149	90,851	2,292	0	0	0	93,143
LMC 96-C-0035	SS/CPAF	3QFY96	57,840	166,661	69,666	52,797	55,886	65,576	35,343	279,268
LMC 98-C-0005	SS/CPAF	1QFY98	292,939	292,939	0	3,913	14,597	21,867	79,456	119,833
Facilities	n/a	n/a			93,300	0	0	0	0	93,300

Exhibit R-3 (PE 0305144F)

1614

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305144F Titan Space Launch Vehicles (Space)

4135

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC *	Project Office EAC *	Total Prior to FY 1997**	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Support and Management Organizations</u>										
Tecolote, SRS, TRW, Antioch, Aerospace			N/A	N/A	150,546	14,100	0	0	0	164,646
			N/A	N/A	73,236	4,600	0	0	0	77,836
			N/A	N/A	0	0	0	0	0	0
<u>Test and Evaluation Organizations</u>										
<u>Government Furnished Property : None</u>										
Subtotal Product Development					2,542,201	59,002	70,483	87,443	114,799	2,873,928
Subtotal Support and Management					223,782	18,700	0	0	0	242,482
Subtotal Test and Evaluation					0	0	0	0	0	0
Total Project					2,765,983	77,702	70,483	87,443	114,799	3,116,410

\* NOTE: The Estimates at Complete are at the contract level and therefore include work funded by the National Reconnaissance Office, NASA and other customers. Thus, the EACs include more than just Air Force funding requirements.

\*\* These figures are only Air Force Titan IV RDT&E funds

Project 4135

Page 5 of 5 Pages

Exhibit R-3 (PE 0305144F)

1615

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305158F

PE TITLE: Tactical Terminals

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY										PE NUMBER AND TITLE	
7 - Operational System Development										0305158F Tactical Terminals	
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
Total Program Element (PE) Cost	2,794	243	237	243	245	249	255	0	TBD		
4394 Combat Intelligence System	1,949	0	0	0	0	0	0	0	5,072		
4395 Radio	845	243	237	243	245	249	255	Cont	TBD		
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

(U) **Note:** The funding request for Project 4394 Combat Intelligence System (CIS) for FY98 and later has been transferred into PE 0207414F. Together with other funds from PEs 0604321F and 0207431F, this was done to consolidate RDT&E funding in a single PE, for program clarity, and reporting efficiency.

(U) **A. Mission Description and Budget Item Justification**

This program was established as part of the Air Force Tactical Exploitation of National Capabilities (TENCAP) normalization effort. Recently, the Constant Source Operator Terminal (CSOT) functionality was transformed into the Combat Intelligence System (CIS). This terminal processes the near-real-time threat information utilized by combat units/aircrews for mission planning and execution. The radio project in this program enables the warfighter to access critical data provided by national and tactical intelligence sources. Currently over 130 ground systems are deployed. Air Force is jointly developing and procuring an airborne qualified radio called Multi-mission Advanced Tactical Terminal (MATT) with US Special Operations Command (SOCOM), Defense Support Program Office (DSPO), and the Navy. This Program Element is assigned in Budget Activity 7, Operational System Development because it involves post-Milestone III efforts and supports development of operational systems.

(U) **Acquisition Strategy:**

Project 4394 - Full and open competition led to a Cost Plus Award Fee contract with Lockheed Martin Command and Control Systems.

Project 4395 - Technology transfer from the Naval Research Laboratory to the contractor. Evolutionary acquisition strategy was implemented with a core capability procured during the first production option. Firm Fixed Price.

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
BUDGET ACTIVITY		February 1998
7 - Operational System Development		
PE NUMBER AND TITLE		
0305158F Tactical Terminals		
(U) B. <u>Program Change Summary (\$ in Thousands)</u>		
(U) Previous President's Budget (FY 1998 PB)		
(U) Appropriated Value		
(U) Adjustments to Appropriated Value		
a. Cong Reductions	FY 1997	FY 1998
b. Small Business Innovative Research	2,799	258
c. Below Threshold Reprogramming	2,914	258
d. Rescissions	-70	-11
(U) Adjustments to Budget Years Since FY 1998 PB	-45	-4
(U) Current Budget Submit/FY 1999 President's Budget	-5	
	2,794	243
(U) Change Summary Explanation:		
Funding: N/A		
Schedule: N/A		
Technical: N/A		
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>		
	FY 1997	FY 1998
(U) Other Procurement, AF (0305158F)	7,293	6178
(U) O&M, PE 0207431, CAIS	3,479	3,740
(U) D. <u>Schedule Profile</u> - See individual projects for Schedule Profiles.		
	FY 1999	FY 2000
	4,243	3,591
	4,911	4,941
	FY 2001	FY 2002
	3,667	4,483
	5,180	5,557
	FY 2003	
	4,499	
	5,781	
	Total	Total
	Cost	Cost
	TBD	TBD
	TBD	TBD

UNCLASSIFIED

# RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305158F Tactical Terminals

4394

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4394	Combat Intelligence System	1,949	0	0	0	0	0	0	0	5,072
	Quantity of RDT&E Articles									

(U) **Note:** The funding request for Project 4394 Combat Intelligence System (CIS) for FY98 and later has been reprogrammed into PE 0207414F. Together with other funds from PEs 0604321F and 0207431F, this was done to consolidate RDT&E funding in a single PE, for program clarity, and reporting efficiency.

## (U) A. Mission Description and Budget Item Justification

(U) Combat Intelligence System (CIS) is the Air Force's single, standard automated intelligence system optimizing both component and unit-level intelligence functions to provide warfighters with the most accurate and timely intelligence data available. CIS is the core capability for automating the receipt, correlation, and dissemination of intelligence information to a variety of intelligence and operational systems which support combat planning and execution. As the intelligence segment to Theater Battle Management Core Systems (TBMCS), it provides an automated capability at the component and unit levels to rapidly receive and process all-source intelligence data to support Contingency Theater Automated Planning System (CTAPS). CIS builds and maintains in-theater situational awareness during deployment to the theater and provides indications and warning support after arrival. CIS provides the capability to receive all-source intelligence near-real-time from national, theater, and tactical reconnaissance platforms. CIS is electronically interoperable and compatible with other intelligence systems, providing an integrated network capable of intelligence support to decision makers, battle planners, mission planners, and warfighters.

### (U) FY 1997 (\$ in Thousands):

-	(U)	\$	245	Completed Studies for CIS intelligence interoperability
-	(U)	\$	1,202	Completed CIS software development under TBM Core Systems
-	(U)	\$	502	Implemented results of studies into CIS software under TBM Core Systems
-	(U)	\$	<b>1,949</b>	<b>Total</b>

### (U) FY 1998 (\$ in Thousands)\*:

-	(U)	\$	0	Total
---	-----	----	---	-------

### (U) FY 1999 (\$ in Thousands)\*:

-	(U)	\$	0	Total
---	-----	----	---	-------

\* FY 1998 and FY 1999: Funding is budgeted in PE 0207414F.

Project 4394

Page 3 of 11 Pages

Exhibit R-2 (PE 0305158F)

1619

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE		
<b>7 - Operational System Development</b>	<b>0305158F Tactical Terminals</b>		<b>February 1998</b> <b>4394</b>
<b>(U) B. <u>Program Change Summary (\$ in Thousands)</u></b>			
(U) FY 1998 President's Budget	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	1,954	0	0
(U) Adjustments to Appropriated Value	2,035		
a. Cong Reductions	-49		
b. Small Business Innovative Research	-32		
c. Below Threshold Reprogramming			
d. Rescissions	-5		
(U) Adjustments to Budget Years Since FY 1998 PB			
(U) FY 1999 President's Budget	1,949	0	0
(U) Change Summary Explanation:			1,949
Funding: N/A			
Schedule: N/A			
Technical: N/A			
<b>(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> - See Other Program Funding Summary above.</b>			
<b>(U) D. <u>Schedule Profile</u></b>			
(U) CIS 1.2 Release	FY 1997	FY 1998	FY 1999
(U) TBMCS Contract Award	1 2 3	1 2 3	2 3 4
(U) TBMCS 1.0 Release	X		
(U) Initial Operational Capability		X	X
<div>Project 4394</div> <div>Page 4 of 11 Pages</div> <div>Exhibit R-2 (PE 0305158F)</div>			

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

## 7 - Operational System Development

PE NUMBER AND TITLE

0305158F Tactical Terminals

4394

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Software Development	1,634	0	0
(U) Systems Engineering Support	130	0	0
(U) Program Management Support	185	0	0
(U) Total	1,949	0	0

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Lockheed Martin	SS/CPAF	Oct 95	Complete	Complete	2,301	1,634	0	0	0	3,935
Cmd & Ctrl Syst										
F19628-95-C0143										
and various others										
<u>Support and Management Organizations</u>										
MITRE		On going	N/A	N/A	551	130	0	0	0	681
TEMS Various Contractors		On going	N/A	N/A	271	185	0	0	0	456
<u>Test and Evaluation Organizations - N/A</u>										

Project 4394

Page 5 of 11 Pages

Exhibit R-3 (PE 0305158F)

1621

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
BUDGET ACTIVITY		PE NUMBER AND TITLE				DATE		PROJECT	
7 - Operational System Development		0305158F Tactical Terminals				February 1998		4394	
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>									
Government Furnished Property: N/A									
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Property</u>									
N/A									
<u>Support and Management Property</u>									
N/A									
<u>Test and Evaluation Property</u>									
N/A									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
<b>Total Project</b>									
					2,301	1,634	0	0	3,935
					822	315	0	0	1,137
					0	0	0	0	0
					3,123	1,949	0	0	5,072

Project 4394

Page 6 of 11 Pages

Exhibit R-3 (PE 0305158F)

Project 4394

Page 6 of 11 Pages

Exhibit R-3 (PE 0305158F)

1622

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305158F Tactical Terminals

PROJECT

4395

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4395	Radio	845	243	237	243	245	249	255	Cont	TBD
	Quantity of RDT&E Articles									

(U) A. Mission Description and Budget Item Justification

(U) This program provides the capability to receive near-real-time threat information utilized by combat units/aircrews for threat warning, mission planning, and execution. It enables the warfighter to access critical data provided by national and tactical intelligence sources. Current fielded radios include the Tactical Receive Equipment (TRE) and Multi-mission Advanced tactical terminal (MATT). The MATTS are being integrated into air and ground platforms which require tactical broadcast functionality. The follow on capability will be provided by the Joint Tactical Terminal and/or Common Integrated Broadcast Service Modules (CIBS-M).

(U) FY 1997 (\$ in Thousands):

- (U) \$ 150 Planned and supported integration on DoD aircraft and weapon systems  
 - (U) \$ 595 Supported MATT radio P<sup>3</sup>I development effort  
 - (U) \$ 100 Supported migration of MATT into next generation tactical terminal  
 - (U) \$ 845 **Total**

(U) FY 1998 (\$ in Thousands):

- (U) \$ 95 Continue to plan and support integration on DoD aircraft and weapon systems  
 - (U) \$ 103 Continue to support migration of MATT into next generation tactical terminal  
 - (U) \$ 45 Continue MATT radio P<sup>3</sup>I development effort  
 - (U) \$ 243 **Total**

Project 4395

Page 7 of 11 Pages

Exhibit R-2 (PE 0305158F)

1623

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development 0305158F Tactical Terminals

PROJECT

4395

(U) FY 1999 (\$ in Thousands):

-	(U)	\$	147	Continue to plan and support integration on DoD aircraft and weapon systems
-	(U)	\$	90	Continue to support migration of MATT into next generation tactical terminal
-	(U)	\$	237	Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) FY 1998 President's Budget	845	258	242	
(U) Appropriated Value	879	258		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-21	-11		
b. Small Business Innovative Research	-13	-4		
c. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-5	
(U) FY 1999 President's Budget	845	243	237	TBD

(U) Change Summary Explanation:

Funding: N/A  
Schedule: N/A  
Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands) - See Other Program Funding Summary above.

Project 4395

Page 8 of 11 Pages

Exhibit R-2 (PE 0305158F)

1624

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
7 - Operational System Development		0305158F Tactical Terminals		
		4395		
(U) D. <u>Schedule Profile</u>				
		FY 1997	FY 1998	FY 1999
		1 2 3	4 1 2 3	4
(U) Exercise FY97 Production Option		*		
(U) FY97 Production Run/Delivery Start			X	
(U) Delivery to Platform Start				
(U) Block II Production			X	
* denotes completed events				

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	PROJECT			
BUDGET ACTIVITY						4395			
7 - Operational System Development					0305158F Tactical Terminals				
Contract									
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Property									
N/A									
Support and Management Property									
N/A									
Test and Evaluation Property									
N/A									
Subtotal Product Development									
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project									
				0	515	58	42	Cont	TBD
				0	330	185	195	Cont	TBD
				0	0	0	0	0	0
					845	243	237	Cont	TBD

Project 4395

Page 11 of 11 Pages

Exhibit R-3 (PE 0305158F)

Project 4395

Page 11 of 11 Pages

Exhibit R-3 (PE 0305158F)

1627

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305160F

UNCLASSIFIED

PE TITLE: Def Meteorological Satellite Prog (Space)

BUDGET ACTIVITY		DATE		PROJECT					
7 - Operational System Development		February 1998		0001					
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
7 - Operational System Development		0305160F Def Meteorological Satellite Prog (Space)		0001					
COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
0001 DMSP	17,618	12,425	20,432	21,027	18,931	14,246	11,128	19,700	295,149
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0
<p><b>(U) A. Mission Description and Budget Item Justification</b></p> <p>The Defense Meteorological Satellite Program (DMSP) is a fully operational joint-service program supporting all military services. Operational commanders require timely, quality weather information to effectively employ weapon systems and protect DoD resources. DMSP is the DoD's most important and often the only source of global weather data. It provides visible and infrared cloud cover imagery (1/3 nm constant resolution) and other meteorological, oceanographic, and solar-geophysical information. This data is required over the entire earth to support global and theater military operations. At least two satellites are required in sun synchronous 450nm polar orbit at all times (sun synchronous means the satellites cross the equator at the same local sun time on each of their 14 orbits/day). Vice President Gore's National Performance Review directed convergence of DMSP with NOAA's weather satellite system. DMSP satellite operations will consolidate with NOAA satellite operations at NOAA's Suitland MD Satellite Operations Control Center (SOCC) in FY 98. This program is in Budget Activity 7, Operational Systems Development, because it supports the current operational DMSP constellation.</p> <p><b>(U) Acquisition Strategy</b></p> <p>Support and services contracts for the spacecraft, sensors, ground systems, and supporting software have been awarded to various contractors. Since no major milestone decisions remain, future considerations facing the program center on successful completion of current contracts, the need for future contractor support of the procured spacecraft, sensors, and ground systems.</p> <p>(U) FY 1997 (\$ in Thousands)</p> <ul style="list-style-type: none"> <li>- (U) \$12,575 Continue system integration and test, calibration and validation, and related support activities.</li> <li>- (U) \$325 Complete Small Tactical Terminal (field portable weather terminal) enhanced algorithm development and implementation.</li> <li>- (U) \$1,377 Begin Mark IVB tactical weather terminal software upgrade for the next block of satellites (5D-3)</li> <li>- (U) \$2,200 Continue support of civilian (DOC/NOAA)/military command and control consolidation efforts</li> <li>- (U) \$1,141 Continue Titan II integration effort (transition from Atlas E due to inventory depletion)</li> <li>- (U) \$17,618 Total</li> </ul>									

Project 0001

Page 1 of 6 Pages

Exhibit R-2 (PE 0305160F)

1629

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0305160F Def Meteorological Satellite Prog

(Space)

PROJECT 0001

## (U) FY 1998 (\$ in Thousands)

- (U) \$11,181 Continue system integration and test, calibration and validation, and related support activities.
- (U) \$200 Continue Titan II integration effort (transition from Atlas E due to inventory depletion).
- (U) \$1,044 Continue Mark IVB tactical weather terminal software upgrade for the next block of satellites (5D-3)
- (U) \$12,425 Total

## (U) FY 1999 (\$ in Thousands)

- (U) \$15,035 Continue system integration and test, calibration and validation, and related support activities.
- (U) \$1,474 Continue Titan II integration effort (transition from Atlas E due to inventory depletion).
- (U) \$2,358 Begin EELV interface design (transition to EELV)
- (U) \$1,000 Begin Small Tactical Terminal (field portable weather terminal) SSMIS software upgrades.
- (U) \$565 Continue Mark IVB tactical weather terminal software upgrade for the next block of satellites (5D-3)
- (U) \$20,432 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998)	14,769	14,076	19,143	297,862
(U) Appropriated Value	15,664	14,076		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-533	-1,364		
b. SBIR	-362	-287		
c. Omnibus or Above Threshold Reprogramming*				
d. Below Threshold Reprogramming	2,875			
e. Recission	-26			
(U) Adjustments to Budget Years Since FY1998 PB			1,289	
(U) Current Budget Submit/FY1999 Presidents Budget	17,618	12,425	20,432	300,349

## (U) Change Summary Explanation:

Funding: FY 97 Omnibus reprogramming (\$5M) funds SSMIS settlement Omnibus increase has been processed but is not yet reflected in the funding database.  
 FY 99 adjusted - (2,000) funds DMSP EELV interface design, -711 funded higher priority AF and DoD requirements.

Schedule: F-14 launch 3QFY97

Technical: No changes.

Project 0001

Page 2 of 6 Pages

Exhibit R-2 (PE 0305160F)

1630

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305160F Def Meteorological Satellite Prog  
(Space)

0001

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Missile Procurement/PE 0305160F (Budget Activity 5, Line Item P-27)	31,556	33,295	36,066	40,366	60,325	40,850	49,580	105,400	1,985,090
(U) Other Procurement/PE 0305160F (Line Item P-63)	15,215	13,278	12,442	6,800	5,496	4,998	2,738	0	288,139

Related RDT&E:

(U) PE 0603434F, National Polar Operational Environmental Satellite System (NPOESS)  
 (U) PE 0305160N, DMSP (provides funds for Navy unique studies)

## (U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
(U) Small Tactical Terminal Delivery Start	1	2	3	4	1	2
(U) Small Tactical Terminal Deliveries Complete	X				3	4
(U) Small Tactical Terminal FOT&E	X					X
(U) 5D-3 Spacecraft Delivery (S16-20)	X				X	
(U) 5D-2 Launches (F-14/F-15)	X					X
(U) Suitland SOC IOC (DMSP Ops)					X	
(U) DMSP SOC (Offutt AFB) Closure					X	

Project 0001

Page 3 of 6 Pages

Exhibit R-2 (PE 0305160F)

1631

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305160F Def Meteorological Satellite Prog  
(Space)PROJECT  
0001(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Launch Vehicle Transition	1,141	200	3,832
(U) Spacecraft Integration and Test	2,706	3,678	7,122
(U) Calibration/Validation	155	0	359
(U) Algorithm Development	1,405	916	838
(U) SSMIS Settlement	44	0	0
(U) MARK IVB/STT Enhancements	1,749	1,138	1,565
(U) Systems Engineering Support	4,339	2,826	2,777
(U) Program Management Support	3,879	3,667	3,939
(U) Command and Control Consolidation	2,200	0	0
(U) Total	17,618	12,425	20,432

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Lockheed-Martin	SS/CPAF	Apr 92	3,764	3,764	3,764	0	0	0	0	3,764
Lockheed-Martin	SS/CPAF	May 97	9,870	9,870	0	122	593	3,391	5,764	9,870
Northrop-Grumman	SS/CPAF	May 95	3,958	3,958	1,350	0	408	2,050	150	3,958
Lockheed-Martin	C/CPAF	Oct 88	39,513	39,513	39,466	47	0	0	0	39,513
Harris	C/CPAF	Jun 94	5,380	5,380	4,961	325	94	0	0	5,380
SM-ALC	FCA	Jan 97	4,168	4,168	0	1,377	1,044	565	1,182	4,168
SMC/CL (Titan)	PO	Oct 94	6,579	6,579	614	1,141	200	1,474	3,150	6,579
Aerojet	SS/CPAF	May 92	2,530	2,530	2,023	507	0	0	0	2,530

Project 0001

Page 4 of 6 Pages

Exhibit R-3 (PE 0305160F)

1632

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305160F Def Meteorological Satellite Prog  
(Space)

0001

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Aerojet	C/CPAF	Mar 89	86,791	86,791	80,949	191	451	200	0	81,791
TBD (SSMIS Sys Eng Spt)	TBD	Dec 97			0	0	685	1,411	3,366	5,462
Hughes	SS/CPFF	May 96	250	250	15	23	70	70	72	250
Phillips Lab	MIPR/PD	Oct 95			2,821	1,142	831	911	Cont	Cont
TBD (STT S/W Upgrades)	TBD	TBD			0	0	0	1,000	3,800	4,800
NRL	MIPR/Various	Oct 95			1,776	1,279	865	1,363	Cont	Cont
APL	MIPR/Various	Oct 95			928	550	491	690	Cont	Cont
SMC (Det 3 SSSG)	FCA	Dec 95			306	2,200	0	0	0	2,506
Sandia	MIPR/Various	Oct 96			200	240	200	361	Cont	Cont
Other	Various				1,893	256	0	230	Cont	Cont
<u>Support and Management Organizations</u>										
FFRDC	MORD*	Oct 95			7,401	2,689	1,726	1,577	Cont	Cont
PRC/bd Systems	C/CPAF	Aug 95			1,566	1,650	1,100	1,200	Cont	Cont
Program Mgmt					5,842	3,879	3,667	3,939	Cont	Cont
Litigation Support					1,809	0	0	0	0	1,809
Other	Various	Jul 91			1,958	0	0	0	0	1,958

Project 0001

Page 5 of 6 Pages

Exhibit R-3 (PE 0305160F)

1633

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998																																			
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT																																				
7 - Operational System Development	0305160F Def Meteorological Satellite Prog (Space)	0001																																				
<p>*MORD - Miscellaneous Obligation/Reimbursement Document - a vehicle/method for committing and obligating funds. In this case the program office sends a letter to SMC/FM to commit &amp; obligate the funds programmed for Aerospace support.</p> <p><u>Test and Evaluation Organizations</u> Not Applicable.</p> <p>(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u></p> <p>Government Furnished Property: Not Applicable.</p> <table border="1"> <thead> <tr> <th></th> <th>Prior to FY 97</th> <th>FY 97</th> <th>FY 98</th> <th>FY 99</th> <th>Budget to Complete</th> <th>Total Program</th> </tr> </thead> <tbody> <tr> <td>Subtotal Product Development</td> <td>141,066</td> <td>9,400</td> <td>5,932</td> <td>13,716</td> <td>Cont</td> <td>Cont</td> </tr> <tr> <td>Subtotal Support and Management</td> <td>18,576</td> <td>8,218</td> <td>6,493</td> <td>6,716</td> <td>Cont</td> <td>Cont</td> </tr> <tr> <td>Subtotal Test and Evaluation</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Project Total</td> <td>159,642</td> <td>17,618</td> <td>12,425</td> <td>20,432</td> <td>Cont</td> <td>Cont</td> </tr> </tbody> </table>					Prior to FY 97	FY 97	FY 98	FY 99	Budget to Complete	Total Program	Subtotal Product Development	141,066	9,400	5,932	13,716	Cont	Cont	Subtotal Support and Management	18,576	8,218	6,493	6,716	Cont	Cont	Subtotal Test and Evaluation	0	0	0	0	0	0	Project Total	159,642	17,618	12,425	20,432	Cont	Cont
	Prior to FY 97	FY 97	FY 98	FY 99	Budget to Complete	Total Program																																
Subtotal Product Development	141,066	9,400	5,932	13,716	Cont	Cont																																
Subtotal Support and Management	18,576	8,218	6,493	6,716	Cont	Cont																																
Subtotal Test and Evaluation	0	0	0	0	0	0																																
Project Total	159,642	17,618	12,425	20,432	Cont	Cont																																
Project 0001		Exhibit R-3 (PE 0305160F)																																				

UNCLASSIFIED

PE NUMBER: 0305164F

UNCLASSIFIED

PE TITLE: Navstar Global Pos Sys (User Eq) (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT				
7 - Operational System Development		0305164F Navstar Global Pos Sys (User Eq) (Space)				3028				
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3028	Navstar GPS	33,760	43,627	67,238	45,145	22,060	15,257	15,860	Continuing	Continuing
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**  
The Global Positioning System (GPS) is a space-based radio positioning, navigation, and time distribution system. GPS User Equipment (UE) consists of standardized receivers, antennae, antenna electronics, etc., grouped together in sets to derive navigation and time information transmitted from GPS satellites. These receiver sets are used by all Services and DoD. RDT&E funds UE development and testing, studies and engineering to assist UE aircraft integration, software upgrades, product improvement studies, commercial GPS UE test and evaluation, and mission support. Due to increasing military GPS dependence and emerging Electronic Warfare (EW) threat, Navigation Warfare (Navwar) program established to address EW solutions for GPS. The three tenets of Navwar are to protect U.S. military and allies' use of GPS, prevent hostile exploitation of GPS, and preserve civil use of GPS outside the area of responsibility (AOR). This program element is in Budget Activity 7 - Operational System Development, because UE passed Milestone IIIB January 1992.

**Acquisition Strategy:** Centrally develop and procure GPS receiver sets for all DoD platforms. Hardware upgrades/modernization accomplished through information and requirements dissemination to industry and study efforts to evaluate alternatives. Individual hardware procurements will be competitively awarded to single vendors. Navwar Advanced Concept Technology Demonstrations (ACTD) provide proof of concept and results feed into ongoing Analyses of Alternatives (AoA). Identified solutions allow start of Engineering Manufacturing Development (EMD) of Navwar UE in FY99.

**(U) FY 1997 (\$ in Thousands):**

- (U) \$ 870 Continued aircraft integration development testing
- (U) \$ 888 Continued user equipment development and product improvement testing
- (U) \$ 1,970 Continued Advanced Concept Technology Demonstration (ACTD) - Protection
- (U) \$ 1,674 Continued Advanced Concept Technology Demonstration (ACTD) - Prevention
- (U) \$ 1,300 Continued Support Contracts
- (U) \$ 3,566 Continued in-house support
- (U) \$ 4,763 Continued Selective Availability Anti-Spoofing Module (SAASM) development
- (U) \$ 3,821 Began Navigation Warfare (NAVWAR) Evaluation Team (NET)
- (U) \$ 3,999 Began classified requirement
- (U) \$ 7,763 Began NAVWAR Industry Studies
- (U) \$ 2,125 Continued NAVWAR Other Studies

Project 3028

Page 1 of 8 Pages

Exhibit R-2 (PE 0305164F)

1635

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305164F Navstar Global Pos Sys (User Eq)  
(Space)PROJECT  
3028

-	(U)	\$ 1,021	Began GPS Modernization/Stewardship Efforts
-	(U)	\$33,760	Total

## (U) FY 1998 (\$ in Thousands):

-	(U)	\$ 800	Continue aircraft integration development testing
-	(U)	\$ 1,000	Continue development and product improvement testing and evaluation
-	(U)	\$ 4,800	Continue ACTD - Protection
-	(U)	\$ 3,300	Continue ACTD - Prevention
-	(U)	\$10,588	Continue SAASM development
-	(U)	\$ 7,850	Continue NET
-	(U)	\$ 3,467	Continue NAVWAR Industry Studies
-	(U)	\$ 1,400	Continue support contracts
-	(U)	\$ 3,122	Continue in-house support
-	(U)	\$ 6,800	Continue classified requirement
-	(U)	\$ 500	Begin security infrastructure
-	(U)	\$43,627	Total

## (U) FY 1999 (\$ in Thousands):

-	(U)	\$ 731	Continue aircraft integration development testing
-	(U)	\$ 5,300	Continue development and product improvement testing and evaluation
-	(U)	\$ 8,800	Continue ACTD - Protection
-	(U)	\$ 2,300	Continue ACTD - Prevention
-	(U)	\$ 5,300	Continue SAASM development
-	(U)	\$ 1,600	Continue NET
-	(U)	\$ 1,500	Continue support contracts
-	(U)	\$ 3,107	Continue in-house support
-	(U)	\$38,600	Begin NAVWAR Engineering Manufacturing Development (EMD)
-	(U)	\$67,238	Total

Project 3028

Page 2 of 8 Pages

Exhibit R-2 (PE 0305164F)

1636

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

## 7 - Operational System Development

0305164F Navstar Global Pos Sys (User Eq)

3028

PE NUMBER AND TITLE

(Space)

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	29,810	46,300	68,590	Continuing
(U) Appropriated Value	31,250	46,300		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-734	-1,533		
b. SBIR	-706	-1,140		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	3,999			
e. Rescission	-49			
(U) Adjustments to Budget Years Since FY1998 PB			-1,352	
(U) Current Budget Submit/FY1999 President's Budget	33,760	43,627	67,238	Continuing

## (U) Change Summary Explanation:

Funding: FY97 Below Threshold Reprogramming (BTR) for a classified requirement (\$3,999), rescission for Bosnia Supplemental (-\$49).  
 FY99 Nonpay inflation adjustment (-\$1,352).

Schedule: Schedule changes result from GPS Joint Program Office (User Equipment Segment) projects realignment.

Technical: No Changes

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Operations and Maintenance (PE 0305164F, BA 1 - Operating Forces, SAG 13D)	1,208	1,484	1,964	2,431	2,621	2,661	2,769	Cont	Cont
(U) Aircraft Procurement (PE 0305164F, BA 7, Aircraft Support Equipment, BPI9, P-74)	36,558	42,946	44,293	37,946	57,237	100,254	135,528	Cont	Cont
(U) Other Procurement (PE 0305164F, BP 63 - Electronics & Telecommunications Equipment, WSC 6730, P-62)	1,893	1,513	1,462	3,830	3,819	4,241	4,371	Cont	Cont
(U) OSD RDT&E (ACTD Funding: PE 0603750D)	4,500	3,900	300						

Project 3028

Page 3 of 8 Pages

Exhibit R-2 (PE 0305164F)

1637

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

February 1998

PE NUMBER AND TITLE

**0305164F Navstar Global Pos Sys (User Eq)  
(Space)**

PROJECT  
3028

(U) PE 0305165F, NAVSTAR GPS (Space/Grd Segments)  
(U) PE 0604480F, GPS Block IIF  
(U) PE 0305176F, Combat Survivor/Evader Locator

	FY 1997	FY 1998	FY 1999
1	2	1	2
	3	3	3
		4	4
			1
			2
			3
			4

(U) GPS Modernization (ORD/JROC)

(U) GPS Modernization (Prgm Decision)

(Independent Studies/AOA/PRDAs)

(U) NAVWAR Next Generation UE EMD

(U) NAVWAR ACTD Dev/Qual complete

Page 4 of 8 Pages

Exhibit R-2 (PE 0305164F)

1638

**UNCLASSIFIED**

## UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305164F Navstar Global Pos Sys (User Eq)

3028

(Space)

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Technical Support for Aircraft Integrations	870	800	731
(U) Development & Product Improvement Testing	888	1,000	5,300
(U) ACTD - Protection	1,970	4,800	8,800
(U) ACTD - Prevention	1,674	3,300	2,300
(U) Support Contracts	1,300	1,400	1,500
(U) In-House Support	3,566	3,122	3,107
(U) SAASM	4,763	10,588	5,300
(U) NET	3,821	7,850	1,600
(U) NAVWAR Industry Studies	7,763	3,467	
(U) Other NAVWAR Studies	2,125		
(U) Classified Requirement	3,999	6,800	
(U) GPS Modernization/Stewardship	1,021		
(U) Security Infrastructure		500	
(U) NAVWAR EMD			38,600
(U) Total	33,760	43,627	67,238

Project 3028

Page 5 of 8 Pages

Exhibit R-3 (PE 0305164F)

1639

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										3028	
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)										0305164F Navstar Global Pos Sys (User Eq)	
Performing Organizations:										(Space)	
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
<u>Product Development Organizations</u>											
Rockwell (MAGR)	FPF/FFP/CPAF	Various	19,293	19,293	19,293	36	0	0	0	19,329	
DOE Sandia (SAASM)	MIPR	Feb 94	18,669	18,669	3,235	2,334	3,600	1,400	8,100	18,669	
NAWC (SAASM)	MIPR	Oct 95	760	760	599	161	0	0	0	760	
Various (SAASM)	Various	Various	Various	Various	0	401	6,988	3,900	0	11,289	
Alliant Techsys Inc (SAASM)	CPFF	Oct 95	4,414	4,414	2,547	1,867	0	0	0	4,414	
Multiple (NAVWAR PRDAs)	CPAF	Aug 96	23,110	23,110	1,446	7,763	3,467	0	10,434	23,110	
Holloman AFB (Integration)	Project Order	N/A	6,191	6,191	0	870	800	731	3,790	6,191	
General Dynamics (Various)	Time and Materials	Jan 96	1,810	1,810	1,810	0	0	0	0	1,810	
Various (ACTD Prevention)	Various	Various	7,774	7,774	0	1,674	3,300	2,300	500	7,774	
Various (ACTD Protection)	Various	Various	26,142	26,142	572	1,970	4,800	8,800	10,000	26,142	
Project 3028										Page 6 of 8 Pages	
										Exhibit R-3 (PE 0305164F)	

1640

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

## 7 - Operational System Development

PE NUMBER AND TITLE

0305164F Navstar Global Pos Sys (User Eq)  
(Space)

3028

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Various (NET)	Various	Various	14,971	14,971	0	3,821	7,850	1,600	1,700	14,971
Various (Classified Requirement)	Various	Various	10,799	10,799	0	3,999	6,800	0	0	10,799
Various (Security Infrastructure)	Various	Various	1,000	1,000	0	0	500	0	500	1,000
Various (EMD)	Various	Various	69,000	69,000	0	0	0	38,600	30,400	69,000
<b>Support and Management Organizations</b>										
Overlook Sys (DUSD/Space)	C/CPFF	Dec 95	Cont	Cont	10,476	1,300	1,400	1,500	Cont	Cont
Aerospace Corp (Technical Supt)	CPFF	Various	Cont	860	800	60	0	0	0	860
SMC/FMB (Shared Prg Cost)	Various	Various	Cont	Cont	1,684	2,414	625	750	Cont	Cont
PRC (Technical Supt)	Time and Materials	Dec 95	714	714	714	0	0	0	0	714
Miscellaneous (In-house support)	Various	Various	Cont	Cont	417	1,056	2,497	1,357	Cont	Cont
Advanced UE Technology Investment (Technical Support)	Various	Various	Various	Various	0	0	0	1,000	Cont	Cont
(GPS Modernization)	Various	Various	Various	Various	0	1,021	0	0	0	1,021

Project 3028

Page 7 of 8 Pages

Exhibit R-3 (PE 0305164F)

1641

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0305164F Navstar Global Pos Sys (User Eq)  
(Space)PROJECT  
3028

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Various (Other Studies)	Various	Various	Various	Various	0	2,125	0	0	0	2,125
<u>Test and Evaluation Organizations</u>										
46th TG (SAASM/Test)	Project Order	Various	31,987	31,987	31,987	0	0	0	0	31,987
46th TG (NAVWAR Test and Eval)	Project Order	Various	Cont	Cont	0	888	1,000	5,300	7,380	14,568
<u>Government Furnished Property:</u>										
(U) Not Applicable.										
Subtotal Product Development					29,502	24,896	38,105	57,331	54,990	215,258
Subtotal Support and Management					14,091	7976	4,522	4,607	Cont	Cont
Subtotal Test and Evaluation					31,987	888	1,000	5,300	7,380	46,555
Total Project					75,580	33,760	43,627	67,238	Cont	Cont

Project 3028

Page 8 of 8 Pages

Exhibit R-3 (PE 0305164F)

1642

UNCLASSIFIED

PE NUMBER: 0305165F

PE TITLE: NAVSTAR GPS (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305165F NAVSTAR GPS (Space)								3030	
COST (\$ in Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
3030	NAVSTAR GPS (Space & Control)	40,875	25,146	21,155	11,013	8,925	9,059	9,375	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
<p><b>(U) A. Mission Description and Budget Item Justification</b>            This program element funds Research and Development for the NAVSTAR Global Positioning System (GPS) Space and Control segments of the overall GPS program. This includes: satellite development (except Block IIF), procurement, and deployment; training simulators; Mission Operation Support Center (MOSC); and ground control segment operation, including sustaining engineering, space and ground segments upgrades, and R&amp;D efforts to support entire GPS system deployment. This program is in Budget Activity 7 - Operational Systems Development, because it is a post-Milestone III program.</p> <p><u>Acquisition Strategy:</u> GPS Operational Control System (OCS) upgrade competitively awarded to a single contractor in July 1995.</p>											
<p>(U) FY 1997 (\$ in Thousands)</p> <ul style="list-style-type: none"> <li>- (U) \$4,769 Continued system engineering including configuration control</li> <li>- (U) \$3,388 Continued training simulator development</li> <li>- (U) \$20,901 Continued OCS Consolidated Contract for Common Operator Support Environment (COSE), OCS Architectural Implementation, and Block IIR full functionality</li> <li>- (U) \$4,000 Investigated space/control segment solutions as part of GPS Navigation Warfare (NAVWAR) program</li> <li>- (U) \$6,314 Continued Sensor to Shooter accuracy improvement effort</li> <li>- (U) \$269 Began space long-range planning and analysis</li> <li>- (U) \$1,234 Continued GPS Joint Program Office support</li> <li>- (U) \$40,875 Total</li> </ul>											
<p>(U) FY 1998 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$2,246 Continue system engineering including configuration management</li> <li>- (U) \$2,566 Continue training simulator development</li> <li>- (U) \$13,997 Continue OCS Consolidated Contract for COSE, OCS Architectural Implementation, and Block IIR Full Functionality</li> <li>- (U) \$6,045 Complete Sensor to Shooter accuracy improvement effort</li> <li>- (U) \$137 Continue space long-range planning and analysis</li> <li>- (U) \$155 Complete R&amp;D funding of GPS Joint Program Office support (continues in procurement appropriation)</li> <li>- (U) \$25,146 Total</li> </ul>											

Project 3030

Page 1 of 5 Pages

Exhibit R-2 (PE 0305165F)

1643

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	PROJECT																																																							
BUDGET ACTIVITY	PE NUMBER AND TITLE	February 1998	3030																																																							
7 - Operational System Development		0305165F NAVSTAR GPS (Space)																																																								
<p>(U) FY 1999 (\$ in Thousands):</p> <ul style="list-style-type: none"> <li>- (U) \$2,132 Continue system engineering including configuration management</li> <li>- (U) \$1,470 Continue training simulator development</li> <li>- (U) \$13,916 Continue OCS Consolidated Contract for COSE, OCS Architectural Implementation, and Block IIR Full Functionality</li> <li>- (U) \$137 Complete space long-range planning and analysis</li> <li>- (U) \$2,600 Begin IIA IMOSC development</li> <li>- (U) \$900 Complete OSS interface to AEP</li> <li>- (U) \$21,155 Total</li> </ul>																																																										
<p>(U) B. Program Change Summary (\$ in Thousands)</p> <table border="0"> <thead> <tr> <th></th> <th>FY 1997</th> <th>FY 1998</th> <th>FY 1999</th> <th>Total Cost</th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget (FY1998 PB)</td> <td>40,442</td> <td>26,685</td> <td>21,580</td> <td>Continuing</td> </tr> <tr> <td>(U) Appropriated Value</td> <td>42,243</td> <td>26,685</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>    a. Cong Gen Reductions</td> <td>-899</td> <td>-882</td> <td></td> <td></td> </tr> <tr> <td>    b. SBIR</td> <td>-902</td> <td>-657</td> <td></td> <td></td> </tr> <tr> <td>    c. Omnibus or Other Above Threshold Reprogram</td> <td>500</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    d. Below Threshold Reprogramming</td> <td>-67</td> <td></td> <td></td> <td></td> </tr> <tr> <td>    e. Rescission</td> <td></td> <td></td> <td>-425</td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY1998 PB</td> <td></td> <td></td> <td>21,155</td> <td>Continuing</td> </tr> <tr> <td>(U) Current Budget Submit/FY1999 President's Budget</td> <td>40,875</td> <td>25,146</td> <td></td> <td></td> </tr> </tbody> </table>					FY 1997	FY 1998	FY 1999	Total Cost	(U) Previous President's Budget (FY1998 PB)	40,442	26,685	21,580	Continuing	(U) Appropriated Value	42,243	26,685			(U) Adjustments to Appropriated Value					a. Cong Gen Reductions	-899	-882			b. SBIR	-902	-657			c. Omnibus or Other Above Threshold Reprogram	500				d. Below Threshold Reprogramming	-67				e. Rescission			-425		(U) Adjustments to Budget Years Since FY1998 PB			21,155	Continuing	(U) Current Budget Submit/FY1999 President's Budget	40,875	25,146		
	FY 1997	FY 1998	FY 1999	Total Cost																																																						
(U) Previous President's Budget (FY1998 PB)	40,442	26,685	21,580	Continuing																																																						
(U) Appropriated Value	42,243	26,685																																																								
(U) Adjustments to Appropriated Value																																																										
a. Cong Gen Reductions	-899	-882																																																								
b. SBIR	-902	-657																																																								
c. Omnibus or Other Above Threshold Reprogram	500																																																									
d. Below Threshold Reprogramming	-67																																																									
e. Rescission			-425																																																							
(U) Adjustments to Budget Years Since FY1998 PB			21,155	Continuing																																																						
(U) Current Budget Submit/FY1999 President's Budget	40,875	25,146																																																								
<p>(U) Change Summary Explanation:</p> <p>Funding: FY97 Below Threshold Reprogramming (BTR) to PE 0303110F for higher priority AF effort(-\$200) and from PE 0305144F to support Auto-Nav test capability on the legacy GPS control system (\$700); BTR from PE 0303131F (\$1,000) and PE 0305911F (\$1,000) for GPS Modernization has been processed but is not yet reflected in funding database.</p> <p>FY98 BTR from PE 0305110F (\$1,700) and PE 0305911F (\$299) for GPS Modernization has been processed but not yet reflected in funding database.</p> <p>FY99 non-pay inflation adjustment (-\$425).</p> <p>Schedule: No change.</p> <p>Technical: No change.</p>																																																										

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305165F NAVSTAR GPS (Space)

3030

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
(U) Operations and Maintenance (PE 0305165F, BA 1 - Operating Forces, SAG 13D)	19,972	20,714	25,540	22,650	26,364	26,606	27,452	Compl Cont	Cost Cont
(U) Missile Procurement (PE 0305165F, BA 5 - Space and Other Support, P-20, 21)	196,965	157,630	174,795	226,822	192,897	134,803	136,487	Cont	Cont
(U) Other Procurement (PE 0305165F, BP 63 - Electronics and Telecommunications Equipment, WSC 6790, P-68)	10,663	10,060	8,430	1,464	665	795	861	Cont	Cont

Related RDT&E:

(U) PE 0305164F, GPS User Equipment  
 (U) PE 0101221N, Fleet Ballistic Missile System  
 (U) PE 0301357F and 0305913F, Nuclear Detonation Detection System (NDS)  
 (U) PE 0305119F Space Boosters (Delta II)  
 (U) PE 0604480F, GPS Block IIF

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	1	2	1	2
(U) Delivery of Block IIR software to AFSPC		3	4		1	4
(U) GPS NAVWAR system mods investigation ends			x		x	x
(U) Continue OCS Consolidated Contract						
(U) Phase 1 delivery						
(U) Phase 2 delivery						
(U) GPS Modernization begins					x	
(U) IIA IMOSC development begins						
(U) OSS interface to AEP complete						x

Project 3030

Page 3 of 5 Pages

Exhibit R-2 (PE 0305165F)

1645

UNCLASSIFIED





UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT
BUDGET ACTIVITY										PE NUMBER AND TITLE		
7 - Operational System Development										0305165F NAVSTAR GPS (Space)		
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Lockheed Martin	CPAF	Jun 99	900	EAC	900	0	0	900	0	900		
<u>Support and Management Organizations</u>												
System Engineer	Various	Various	N/A	N/A	12,909	4,742	2,246	2,132	Cont	Cont		
Program Support	Various	Various	N/A	N/A	5,359	1,234	155	0	0	6,748		
<u>Test and Evaluation Organizations</u>												
N/A					133,332	34,872	22,745	19,023	Cont	Cont		
Subtotal Product Development					18,268	6,003	2,401	2,132	Cont	Cont		
Subtotal Support and Management					0	0	0	0	0	0		
Subtotal Test and Evaluation					151,600	40,875	25,146	21,155	Cont	Cont		
Total Project												

Project 3030

Page 5 of 5 Pages

Exhibit R-3 (PE 0305165F)

Project 3030

Page 5 of 5 Pages

Exhibit R-3 (PE 0305165F)

1647

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305182F

PE TITLE: Eastern Space Launch Facility (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
PE NUMBER AND TITLE										9222	
7 - Operational System Development										0305182F Eastern Space Launch Facility (Space)	
COST (\$ In Thousands)										FY 1997 Actual	FY 1998 Estimate
										FY 1999 Estimate	FY 2000 Estimate
										FY 2001 Estimate	FY 2002 Estimate
										FY 2003 Estimate	Cost to Complete
											Total Cost

9222 Range Standardization and Automation (RSA) Program

Quantity of RDT&amp;E Articles

**(U) A. Mission Description and Budget Item Justification**

Two national ranges, the Eastern Range (ER) at Patrick AFB, FL, and the Western Range (WR) at Vandenberg AFB, CA, provide tracking, telemetry, communications, command/control and other support capabilities necessary to safely conduct civil, commercial, and national security spacelift operations, ballistic missile test and evaluation (T&E), and a variety of aeronautical and guided weapons T&E. Range assets are based on 1950s/1960s designs and technology and are arrayed in a highly inefficient, manpower-intensive architecture. Range instrumentation reliability is deteriorating and over 40% of the components are obsolete with no sources of support. The ranges do not provide the responsiveness and flexibility critical to affordably support the nation's spacelift needs. Replacement of the aging systems is a necessity. Range Standardization and Automation (RSA) will completely overhaul and modernize both the ER and the WR, treating the two as a single integrated range system with an Eastern and Western segment. RSA will develop the integrated range system, using remote control and automation techniques to reduce the number of required operators, sites and facilities, and to produce improved responsiveness. The result will be a range system reconfigurable from one major operation to another in less than 4 hours versus 2-3 days, capable of being operated for 20% less cost than current ranges, and supportable through existing Air Force logistics infrastructure and standard practices. RSA is critical to the future of the spacelift ranges; performance and cost goals cannot be achieved without RSA. Categorized as Budget Activity 7, Operational Systems Development, because it upgrades existing operational capabilities with new systems. Funding for RSA design and integration for both Eastern and Western Ranges is consolidated in this Eastern Range program element to reflect the standard range being developed for both ranges. A parallel sustaining improvement and modernization activity for existing range systems is separately funded with procurement funds.

**(U) Acquisition Strategy:**

The RSA Phase I contract was competitively awarded in FY 1993 to provide interconnection between major ER stations at Antigua and Ascension Islands and the ER Operations Control Center via a satellite communications network; standardize and centralize telemetry processing for the ER and WR; and modernize and automate the Cape Canaveral Communications Network. The FY 1996 RSA Phase IIA contract was competitively awarded to provide a top down systems approach which standardizes the spacelift range architecture, incorporating assets from RSA I, RSA IIA, RSA IIB, selected I&M projects, and selected existing assets. It provides new assets to modernize range safety systems, data processing, communications, command/control, meteorological systems, and imaging. The RSA IIB phase will replace tracking, telemetry and command instrumentation based on the RSA Phase IIA architecture resulting in maximum automation and minimum manning.

(U) FY 1997 (\$ in Thousands)

Project 9222

Page 1 of 5 Pages

Exhibit R-2 (PE 0305182F)

1649

UNCLASSIFIED

## UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998		
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		
7 - Operational System Development		0305182F Eastern Space Launch Facility (Space)		9222		
-	(U)	\$8,776	Continued RSA Phase I: Integrated and began test of communications network.			
-	(U)	\$23,396	Continued RSA Phase IIA: Completed range architecture design; developed weather, planning and scheduling, and Control & Display basic infrastructure; and began integration and test of product items for Range Delivery Increment (RDI) 1.			
-	(U)	\$1,728	Provided program support for System Program Office.			
-	(U)	\$33,900	Total			
-	(U)	FY 1998 (\$ in Thousands)				
-	(U)	\$9,542	Continues RSA Phase I: Completes design and begin integration of Consolidated Telemetry Processing System (CTPS). Funds SATCOM lease.			
-	(U)	\$21,190	Continues RSA Phase IIA: Continues RDI 1 product item development; begins converting communications network infrastructure to a seamless, multipath system, including network controllers and GPS-based timing, and completes product development test of RDI 1.			
-	(U)	\$1,286	Provides program support for System Program Office.			
-	(U)	\$32,018	Total			
-	(U)	FY 1999 (\$ in Thousands)				
-	(U)	\$7,498	Continue RSA Phase I: Finishes integration of CTPS. Completes system test and evaluation. Fund SATCOM lease.			
-	(U)	\$15,780	Continue RSA Phase IIA: Continue Control & Display integration and test for operational turnover; continue development of communications network including network core. Begin development of voice, video, and data network modernization.			
-	(U)	\$1,300	Provide program support for System Program Office.			
-	(U)	\$24,578	Total			
(U) B. Program Change Summary (\$ in Thousands)						
(U)	Previous President's Budget	(FY 1998 PB)	FY 1997	FY 1998	FY 1999	Total
(U)	Appropriated Value		33,956	34,186	33,472	Continuing
(U)	Adjustments to Appropriated Value		35,704	34,186		
a.	Congressional/General		-820	-1305		
b.	SBIR		-928	-863		
c.	Omnibus and other Above Threshold					
d.	Rescissions		-56			
e.	Below Threshold Reprogramming					
(U)	Adjustments to Budget Years Since FY 1998 PB				-8894	
(U)	Current Budget Submit/FY 1999 President's Budget		33,900	32,018	24,578	Continuing
(U)	Change Summary Explanation:					

Exhibit R-2 (PE 0305182F)

Page 2 of 5 Pages

Project 9222

Project 9222

Page 2 of 5 Pages

Exhibit R-2 (PE 0305182F)

1650

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305182F Eastern Space Launch Facility (Space)

9222

Funding: FY 1999 DoD reduction funds higher priority needs.

Schedule: FY 1998 reductions delay flight analysis/range safety and communications upgrades by 6 months.

Technical: Delay increases risk of range safety failure resulting in launch delay or inadvertent destruction of launch vehicle and payload.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
(U) Other Procurement, AF, BA 03, P-66, Eastern/Western Range I&M Space	99,175	79,255	93,848	80,918	96,931	151,136	144,384	Continuing	26,876
(U) MILCON, AF, Project XUMU983004, Launch Operations Control Center		26,876							

(U) Related RDT&amp;E: Not Applicable.

\* In addition to RSA, PE 0305182F includes funds required for ongoing Eastern Range sustaining improvement and modernization (I&amp;M) program.

Western Range RSA and I&amp;M are included in PE 0305181F. Funding shown is for both PEs.

\*\* FY 1998 MILCON funds are in PE 0305181F; FY 1998 funds are for the Western Range Operations Control Center (WROCC) to house WROCC RSA systems.

## (U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) RSA Phase I Critical Design Review									
(U) RSA Phase IIA System Design Rev									
(U) RSA Phase IIA RDI-1 Product Development T&E (1 <sup>st</sup> )									
(U) RSA Phase IIA Weather Instrumentation Facilities									
(U) RSA Phase IIA RDI-1 Product Development T&E (complete)									
(U) RSA Phase I Cape Fiber Optic Network Inst'l									
(U) RSA Phase I SATCOM Installation									
(U) WR Ops Cntrl Cntr Beneficial Occupancy Date									
(U) RSA Phase IIA RDI-1 System Integration Test Complete									
(U) RSA Phase I Operational T&E									
(U) RSA Phase I System Turnover									
(U) RSA Phase IIA RDI-1 Combined DT&E and IOT&E									

(U) RSA Phase I Critical Design Review

(U) RSA Phase IIA System Design Rev

(U) RSA Phase IIA RDI-1 Product Development T&E (1<sup>st</sup>)

(U) RSA Phase IIA Weather Instrumentation Facilities

(U) RSA Phase IIA RDI-1 Product Development T&amp;E (complete)

(U) RSA Phase I Cape Fiber Optic Network Inst'l

(U) RSA Phase I SATCOM Installation

(U) WR Ops Cntrl Cntr Beneficial Occupancy Date

(U) RSA Phase IIA RDI-1 System Integration Test Complete

(U) RSA Phase I Operational T&amp;E

(U) RSA Phase I System Turnover

(U) RSA Phase IIA RDI-1 Combined DT&amp;E and IOT&amp;E

Project 9222

Page 3 of 5 Pages

Exhibit R-2 (PE 0305182F)

1651

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305182F Eastern Space Launch Facility (Space)

9222

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) RSA Phase I Contract	8,776	9,542	7,498
(U) RSA Phase IIA Contract	23,396	21,190	15,780
(U) Program Support	1,728	1,286	1,300
(U) Total	33,900	32,018	24,578

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	To Complete	Total Program
Product Development Organizations										
Harris Corp/Loral	C/CPAF	Jun 93	93,859	93,859	69,571	8,776	9,542	7,498	0	93,859
(RSA Phase I) Lockheed Martin	C/CPAF	Nov 95	166,521	166,521	9,800	23,396	21,190	15,780	96,355	166,521
(RSA Phase IIA) Harris Corp.	SS/CPAF	Apr 94	23,852	23,852	23,852	0	0	0	0	23,852
(ROCC Eng'r Services)										
Various (Other RSA)	Various	Various	N/A	N/A	2,913	0	0	0	0	2,913

## Support and Management Organizations

Mission Support	Various	Various	N/A	N/A	10,021	1,728	1,286	1,300	Cont.	Cont.
-----------------	---------	---------	-----	-----	--------	-------	-------	-------	-------	-------

## Test and Evaluation Organizations

Project 9222										Exhibit R-3 (PE 0305182F)
--------------	--	--	--	--	--	--	--	--	--	---------------------------

Page 4 of 5 Pages

1652

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE			
7 - Operational System Development										0305182F Eastern Space Launch Facility (Space)			9222
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligat'n Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	To Complete	Total Program			
											1998	N/A	N/A
<u>Government Furnished Property:</u> RSA Phase IIA contract awarded Nov 95; process underway to identify GFE													
Subtotal Product Development						106,136	32,172	30,732	23,278	96,355	287,145		
Subtotal Support and Management						10,021	1,728	1,286	1,300	Cont.	Cont.		
Subtotal Test and Evaluation						N/A	N/A	N/A	N/A	N/A	N/A		
Total Project						116,157	33,900	32,018	24,578	Cont.	Cont.		

Project 9222

Page 5 of 5 Pages

Exhibit R-3 (PE 0305182F)

Project 9222

Page 5 of 5 Pages

Exhibit R-3 (PE 0305182F)

1653

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305205F

PE TITLE: Endurance UAVs

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0305205F Endurance UAVs

PROJECT

4755

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
4755 Predator UAV	0*	14,147	4,307	4,076	3,800	3,883	3,960	0	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

\* In FY 1997, \$7,777M was included in DARP PE0305205D for Predator.

(U) A. Mission Description and Budget Item Justification

The Predator unmanned aerial vehicle (UAV) was an Advanced Concept Technology Demonstration (ACTD) project funded in PE 0305154D for the development of an endurance UAV capable of sustained (long dwell) surveillance of critical targets, under most weather conditions, at a range of 500 nm from the launch area. The Predator is equipped with Electro-Optical/Infra-Red (EO/IR) and Synthetic Aperture Radar (SAR) sensors. The system also incorporates line-of-sight (LOS), narrow-band UHF SATCOM and wide-band Ku-band SATCOM datalinks capable of providing near-real-time (NRT) transmission of high resolution imagery throughout the operational envelope. The system supports the theater commander and interfaces with the Command, Control, Communication, Computer and Intelligence (C4I) architecture. The Predator is integral to the search and destruction of Critical Mobile Targets (CMT). The success of the Predator in a number of exercises and operational deployments in Bosnia has prompted the Joint Requirements Oversight Council (JROC) to request an additional quantity of systems and sensors. The JROC has identified a number of P3I upgrades (de-icing, UHF/VHF voice relay, and IFF Mode IV) to be included with production systems. IR sensor improvements and growth payloads are being considered. UAV Common Automated Recovery System (UCARS) has been added by Congress. This program is in budget activity 7, Operational Systems Development, because it involves follow-on Air Force R&D to make it a viable system.

## (U) FY 1997 (\$ in Thousands):

- (U) 0 Total - Funds included in DARP PE 0305205D

## (U) FY 1998 (\$ in Thousands):

- (U) \$1070 Complete VOX/IFF/De-ice  
 - (U) \$2000 Conduct operational tests/operational assessment  
 - (U) \$2660 Other P3I (accuracy, acoustics, NBC assessment...)  
 - (U) \$1000 Improve operational capabilities of Ku SATCOM  
 - (U) \$1200 Improve system R&M to meet ORD requirements  
 - (U) \$5800 Integrate UAV Common Automatic Recovery System (UCARS)  
 - (U) \$ 417 Field support  
 - (U) \$14147 Total

Project 4755

Page 1 of 5 Pages

Exhibit R-2 (PE 0305205F)

1655

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4755

## 7 - Operational System Development

0305205F Endurance UAVs

## (U) FY 1999 (\$ in Thousands):

- (U) \$1050 Conduct operational tests/operational assessment  
 - (U) \$ 500 Develop interfaces to Theater Deployable Communications (TDC)  
 - (U) \$ 940 Other P3I (accuracy, acoustics, NBC assessment...)  
 - (U) \$ 900 Improve operational capabilities of Ku SATCOM  
 - (U) \$ 500 Improve system R&M to meet ORD requirements  
 - (U) \$ 417 Field support  
 - (U) \$4307 Total

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	Total Cost
(U) Previous President's Budget	0	0	0	0
(U) Appropriated Value		14,990		
(U) Adjustments to Appropriated Value				
a. Cong Reductions		-489		
b. SBIR		-354		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Year Since 98PB				
(U) Current Budget Submit/FY 1999 President's Budget	0	14,147	4,307	TBD

## (U) Change Summary Explanation:

Funding: FY98 funds requested under PE 0305205D but appropriated under PE 0305205F

Schedule: Funding changes have necessitated a restructure of Block I upgrades (FY98), deferring contract to FY00/01

Technical: None

Project 4755

Page 2 of 5 Pages

Exhibit R-2 (PE 0305205F)

1656

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305205F Endurance UAVs

4755

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Aircraft Procurement, AF (PE 35205F)	104832	138340	117961	43017	26777	52345*	78070*	continues	continues
(U) Other Procurement, AF (PE 27245F)	2858								
(U) MILCON, AF (PE 27245F)	4690		15013						
(U) O&M, AF (PE 27245F)**	7440	18188	25988	30489	29382	31867	30959	continues	continues
(U) Other Procurement, Navy	5600								

\* Includes HAE UAV procurement funds

\*\* Includes UAV Battle Lab funds starting in FY99

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999
(U) Production Rate Verification Start	1	2	3
(U) TEMP approval		4	1
(U) OT&E		*	2
			3
			4
			X
			X

Project 4755

Page 3 of 5 Pages

Exhibit R-2 (PE 0305205F)

1657

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305205F Endurance UAVs

4755

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Hardware/Software	2162	4350	1620
(U) Demonstrations and test	2685	4690	1140
(U) System integration and logistics support	1526	4110	990
(U) Other technical/engineering	1109	997	557
(U) DARP integration and support	295		
(U) Total	7777	14147	4307

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
General Atomics	SS/CPFF	Apr 98	N/A	N/A	N/A	2615	12702	3050	continuing	continuing
L3 Com	SS/CPFF	Apr 98	N/A	N/A	N/A	969	0	0	0	969
Misc		Dec 97	N/A	N/A	N/A	218	0	0	0	218
<u>Support and Management Organizations</u>										
NAWC								417	continuing	continuing
AD/NAVAIR						374	320			
Misc						792				
US Army Missile Command						1600				

Project 4755

Page 4 of 5 Pages

Exhibit R-3 (PE 0305205F)

1658

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305205F Endurance UAVs

4755

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Test and Evaluation Organizations										
AFOTEC						480	795	840	continuing	continuing
NAWC,WD						293				
Misc						436	330			

## (U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

## Government Furnished Property:

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Property									
N/A									
Support and Management Property									
N/A									
Test and Evaluation Property									
N/A									
Subtotal Product Development					3802	12702	3050	continuing	continuing
Subtotal Support and Management					2766	320	417	continuing	continuing
Subtotal Test and Evaluation					1209	1125	840	continuing	continuing
Total Project					7777	14147	4307	continuing	continuing

Project 4755

Page 5 of 5 Pages

Exhibit R-3 (PE 0305205F)

1659

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305207F

UNCLASSIFIED

PE TITLE: Manned Reconnaissance

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305207F Manned Reconnaissance								4754	
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4754 COBRA BALL Field Laser Demo (FLD)		0	11,360	0	0	0	0	0	0	0	11,360
Quantity of RDT&E Articles		0	0	0	1	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

(U) This project supports design studies, engineering analysis, non-recurring engineering, and other efforts associated with modifications to the RC-135 or its mission systems. The results of these efforts provide the requisite engineering necessary to implement modifications or provide a preliminary assessment of the technical feasibility, operability, or general military utility of an application. This particular project develops and evaluates a Laser Ranging and Imaging system for the COBRA BALL platform.

(U) This Congressionally directed project continues the effort funded by Congress in FY97 through the design and fabrication of an Advanced Airborne Sensor (AAS) based upon previous technology developed under the Field Laser Demonstration program (PE 0305154F BPAC 4607, Congressional plus up), and produces aircraft integration design data.

(U) COBRA BALL AAS is in Budget Activity 7, Operational System Development. It involves integration of off-the-shelf technology into fielded (operational) systems.

**(U) Acquisition Strategy:**

(U) The RC-135 sustainment and modification activities are managed by the Air Force through the BIG SAFARI program. Only the Air Force Acquisition Executive, SAF/AQ, may assign programs to BIG SAFARI. These projects are managed by a single Air Force Material Command (AFMC) organization, ASC/RAB. ASC/RAB provides technical oversight and management of all aircraft, ground and support system modifications, integration and flight test engineering responsibility, product assurance and acceptance testing, and logistics and training activities.

(U) FY 1997 (\$ in Thousands):  
 - (U) \$0 Total

Project 4754

Page 1 of 5 Pages

Exhibit R-2 (PE 0305207F)

1661

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development 0305207F Manned Reconnaissance 4754

(U) FY 1998 (\$ in Thousands):

- (U) \$2,970 Prototype Design  
 - (U) \$320 Simulation and Analysis  
 - (U) \$230 Aircraft Integration  
 - (U) \$250 Range-In-A-Box (testing tool)  
 - (U) \$5,460 Sensor Build and Ground Test  
 - (U) \$540 System Integration Test  
 - (U) \$110 Range-In-A-Box Test  
 - (U) \$1,480 System Integration/Program Administration  
 - (U) \$11,360 Total

(U) FY 1999 (\$ in Thousands):

- (U) \$0 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget* (FY 1998PB)	0	0	0	0
(U) Appropriated Value	0*	12,000		12,000
(U) Adjustments to Appropriated Value				
a. Cong Reductions	0	-393		
b. SBIR	0	-247		
c. Omnibus or Other Above Threshold Reprogram	0	0		
d. Below Threshold Reprogramming	0	0		
(U) Adjustments to Budget Years Since FY 1998 PB	0	0	0	
(U) Current Budget Submit/FY 1999 President's Budget	0	11,360	0	11,360

Project 4754

Page 2 of 5 Pages

Exhibit R-2 (PE 0305207F)

1662

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305207F Manned Reconnaissance

4754

## (U) Change Summary Explanation:

Funding: FY97 \$5M Congressional add started program in PE 0305154F BPAC 4607

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Not Applicable									

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	
(U) Preliminary Design Review	1	2	3	4	1	2	3	4
(U) Critical Design Review					X			
(U) Prototype Delivery (Q1 FY00)*						X		

\*Congress provided lump sum as an add on in FY1998 to complete a prototype. Congressionally directed tasks require 18 months to complete. All funds will be obligated in FY98.

Project 4754

Page 3 of 5 Pages

Exhibit R-2 (PE 0305207F)

1663

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE			
7 - Operational System Development		0305207F Manned Reconnaissance		February 1998	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) System Design and Analysis		0	3,290	0	
(U) Fabrication and Test		0	6,360	0	
(U) Integration and Support		0	1,710	0	
(U) Total		0	11,360	0	
(U) B. <u>Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
Performing Organizations:					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
Product Development Organizations (FY97 activity was in PE 0305154F BPAC 4607)					
ASC/RAB	Multiple	Aug 97	4,750	4,750	0
Support and Management Organizations					
N/A					
Test and Evaluation Organizations					
N/A					
				<u>Budget FY 1998</u>	<u>Budget to FY 1999 Complete</u>
				11,360	0
					0
					16,110
Project 4754		Page 4 of 5 Pages		Exhibit R-3 (PE 0305207F)	

1664

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		
7 - Operational System Development		0305207F Manned Reconnaissance		4754		
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)						
Government Furnished Property: None						
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998
					Budget FY 1999	Budget to Complete
Product Development Property						
N/A						
Support and Management Property						
N/A						
Test and Evaluation Property						
N/A						
Subtotal Product Development				0	11,360	0
Subtotal Support and Management				0	0	0
Subtotal Test and Evaluation				0	0	0
Total Project				0	11,360	0
						16,110

Project 4754

Page 5 of 5 Pages

Exhibit R-3 (PE 0305207F)

Project 4754

Page 5 of 5 Pages

Exhibit R-3 (PE 0305207F)

1665

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305906F

UNCLASSIFIED

PE TITLE: NCMC-TW/AA Systems

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0305906F NCMC-TW/AA Systems									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		26,717	6,726	7,878	4,607	4,252	3,776	3,792	Continuing	Continuing	
3880 CMU		12,884	548	118	0	0	0	0	0	1,291,980	
3881 Integrated TW/AA		9,079	4,761	6,736	4,607	4,252	3,776	3,792	Continuing	Continuing	
4409 Legacy Interfaces		4,754	1,417	1,024	0	0	0	0	0	47,602	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**

This program element funds the replacement systems for the Cheyenne Mountain Complex (CMC) which provides the Command, Control, Communications and Computers (C4) in support of the Integrated Tactical Warning/Attack Assessment (Integrated TW/AA) system. This program incrementally upgrades and replaces the current operational systems without loss of attack warning capability during the phased transition. The CMC supports the Commander-in-Chief (CINC) North American Aerospace Defense Command (NORAD)/CINC US Space Command in providing the National Command Authorities, USSSTRATCOM and other forward users with early warning (missile, air, and space) and assessment of attack on North America or its allies.

This program element has three related projects: The first project, Cheyenne Mountain Upgrade (CMU), is six acquisitions that are supported by both the second and third project. The second project, Integrated TW/AA System Engineering, provides interface analysis and disconnect resolution between CMU and over twenty other Integrated TW/AA systems and future program upgrades and supports the development of the Cheyenne Mountain Training System (CMTS). The third project, Legacy Interfaces, provides software development upgrades to post-IOC CMU subsystems and direct mission software support to meet operational needs.

This program element is in Budget Activity 7, Operational System Development, because the projects in this program element support development acquisition programs or upgrades.

**(U) Acquisition Strategy:**

The CMU program was restructured in FY94 to implement an acquisition strategy that tests and delivers four phases of user capability. Phase 1 implemented the complete missile warning capability in Sep 95. Phase 2 operational acceptance occurred in August 1996. Phase 3 operational acceptance occurred in July 1997. Phase 4 will be operationally accepted in August 1998. The CMU Integrated Mission IOT&E will be completed by Mar 1999.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total
(U) Previous President's Budget (FY1998 PB)	29,466	7,362	5,036	Continuing
(U) Appropriated Value	31,692	7,362		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-1,446	-480		
b. SBIR	-780	-156		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-2,700			
e. Recisions	-49			
(U) Adjustments to Budget Years Since FY 1998 PB			2,842	
(U) Current Budget Submit (FY1999 President's Budget)	26,717	6,726	7,878	Continuing

## (U) Change Summary Explanation:

Funding: FY 97 Below Threshold Reprogramming (BTR) to higher priority Air Force program. FY99 adjustment to fund CSAF - directed AF Long Range Plan (AF LRP) jump start initiative for Space Command and Control (C2) prototyping. This effort will generate different options to migrate current Space C2 applications to the Defense Information Infrastructure Common Operating Environment (COE).

Schedule: No change.

Technical: No change.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
(U) Other Procurement (Electronics and telecommunications equipment/BA04/PE0305906F)*	4,481	8,758	12,722	4,621	12,820	11,842	10,826	Compl	Cost
(U) Operations & Maintenance (PE0305906F)								Cont	Cont
* Includes spares for CMU and Space Mobile Consolidated Command Center (MCCC) modifications.	98,207	92,629	91,910	89,216	95,318	99,186	100,821	Cont	Cont

## Related RDT&amp;E:

(U) 604441F, Space-Based Infrared System  
 (U) 305910F, Spacetrack  
 (U) 305911F, Defense Support Program

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0305906F NCMC-TW/AA Systems									
(U) D. <u>Schedule Profile</u>											

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0305906F NCMC-TW/AA Systems

PROJECT

3880

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3880 CMU		12,884	548	118	0	0	0	0	0	1,291,980

(U) A. Mission Description and Budget Item Justification

The CMU program must meet Joint Chiefs of Staff (JCS) requirements to provide the National Command Authorities with timely, reliable, and unambiguous Integrated TW/AA data for force survival or retaliatory decisions in the face of air, space, or ballistic missile threats. The program will provide: 1) survivable communications access for missile attack warning; 2) integrated warning of ballistic missile, atmospheric, and space threats; 3) standard user displays and warning processing systems at selected command centers; 4) an austere alternate facility capable of early/trans-attack warning and peacetime backup to the Missile Warning Center at Cheyenne Mountain. The CMU program implements an acquisition strategy that tests and delivers four phases of user capability. Phase 1 implemented the missile warning capability in Sept 1995. Phases 2 and 3 were completed in August 1996 and July 1997, respectively. Phase 4 will be operationally accepted in August 1998. The CMU Integrated Mission IOT&E will be completed by Mar 1999.

(U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition.

(U) FY 1997 (\$ in thousands)	
(U) \$5,224 Completed Phase 3 (July 97) with operational acceptance of Granite Sentry and Missile Warning remote capability	
(U) \$6,764 Continued Phase 4, Space Defense Operations Center (SPADOC) 4C version 2 interface development with the Communications System Segment Replacement (CSSR)	
(U) \$896 Completed Missile Warning IOT&E residuals and delivered Survivable Secure Communications Network (SSCN) Phase 2 (Feb 97)	
(U) \$12,884 Total	
(U) FY 1998 (\$ in thousands)	
(U) \$548 Complete CMU Phase 4 and Space Control Mission Operational Acceptance	
(U) \$548 Total	
(U) FY 1999 (\$ in thousands)	
(U) \$118 Complete CMU Integrated Mission IOT&E	
(U) \$118 Total	

Project 3880

Page 4 of 16 Pages

Exhibit R-2 (PE 0305906F)

1670

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PROJECT

3880

PE NUMBER AND TITLE

0305906F NCMC-TW/AA Systems

## 7 - Operational System Development

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total
(U) Previous President's Budget (FY 1998 PB)	16,010	603	120	1,297,524
(U) Appropriated Value	21,375	603		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-1231	-55		
b. SBIR	-780			
c. Below Threshold Reprogramming	-2,700			
d. Omnibus or Other Above Threshold Reprogram				
e. Rescissions	-49			
f. Other (Project Realignment)	-3,731		-2	
(U) Adjustments to Budget Years Since FY 1998 PB			118	
(U) Current Budget Submission (FY 1999 President's Budget)	12,884	548		1,291,980

## (U) Change Summary Explanation (\$ in Thousands):

Funding: FY97 realignment (-3,731) to project 3881 (+3,633) and project 4409 (+98).

Schedule: No change.

Technical: No change

Project 3880

Page 5 of 16 Pages

Exhibit R-2 (PE 0305906F)

1671

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

3880

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
Other Procurement (Electronics and telecommunications equipment/BA04/PE0305906F)*	4,481	8,758	12,722	4,621	12,820	11,842	10,826	Cont	Cont
(U) Operations & Maintenance (PE0305906F)	98,207	92,629	91,910	89,216	95,318	99,186	100,821	Cont	Cont

\* Includes spares for CMU and Space Mobile Consolidated Command Center (MCCC).

## (U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999					
	1	2	3	4	1	2	3	4	1	2	3	4
(U) Air Warning Mission Operational Acceptance												
(U) CMU Phase 3 Operational Acceptance												
(U) Space Control Mission Operational Acceptance												
(U) CMU Phase 4 Operational Acceptance												
(U) CMU Integrated Mission IOT&E												

Project 3880

Page 6 of 16 Pages

Exhibit R-2 (PE 0305906F)

1672

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY		PROJECT		
7 - Operational System Development		3880		
		PE NUMBER AND TITLE		
		0305906F NCMC-TW/AA Systems		
		FY 1997	FY 1998	FY 1999
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
(U) Major Contract Incremental Funding		636		
(U) Award/Performance Fee		29		
(U) Target To Ceiling/Overrun		346		
(U) ECPs/Correction of Deficiencies/Incomp		219		
(U) Interoperability/Test Support		452		
(U) Tech Manuals		4		
(U) SPO Support				
(U) MITRE		5,063		
(U) TEMS/SDAS/WSI/SAIC/NSR		4,179		
(U) Program Support		1,956	548	118
(U) Other Support		0		
(U) Total		12,884	548	118

Project 3880

Page 7 of 16 Pages

Exhibit R-3 (PE 0305906F)

1673

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

3880

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)  
Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Lockheed-Martin CO Springs CO	C/CPIF/AF	Oct 91	72,300	72,300	271,669	145	0	0	0	271,814
E-Systems St Petersburg FL	C/FPI/AF	Aug 86	107,000	106,500	103,240	0	0	0	0	103,240
TRW, Inc Carson CA	C/FPI/AF	Jun 87	172,600	172,600	213,761	0	0	0	0	213,761
GTE	C/CPIF/AF	Jan 92	16,500	16,500	238,063	352	0	0	0	238,415
Needham Hgts MA	SS/CPIF/AF	Mar 93	41,300	41,300	119,713	305	0	0	0	120,018
Lockheed-Martin CO Springs CO	PO	Oct 93	9,092	9,092	9,092	60	0	0	0	9,152
DISA (Govt) Reston VA	AF616/C	Aug 95	3,176	3,176	3,176	0	0	0	0	3,176
KAMAN Sciences CO Springs CO	Various	Various	820	820	0	820	0	0	0	820
Misc										
<u>Support and Management Organizations</u>										
MITRE	SS/PR	Oct 95	N/A	N/A	163,497	5,063	0	0	0	168,560
TEMS	C/PR	Oct 95	N/A	N/A	68,636	4,179	0	0	0	72,815
Program Support	Various	Nov 95	N/A	N/A	87,583	1,960	548	118	0	90,209
<u>Test and Evaluation Organizations</u>										
N/A										

Project 3880

Page 8 of 16 Pages

Exhibit R-3 (PE 0305906F)

1674

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305906F NCMC-TW/AA Systems

3880

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Government Furnished Property: Not Applicable.

Subtotal Product Development	958,714	1,682	0	0	0	960,396
Subtotal Support and Management	319,716	11,202	548	118	0	331,584
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	1,278,430	12,884	548	118	0	1,291,980

Project 3880

Page 9 of 16 Pages

Exhibit R-3 (PE 0305906F)

1675

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3881

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3881 Integrated TW/AA	9,079	4,761	6,736	4,607	4,252	3,776	3,792	Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

This project was set up in 1989 when Air Force recognized the phased transition of CMU program into the Integrated TW/AA network could only be achieved through rigorous system-of-systems design and engineering analysis of all interfaces and relationships among the twenty-six systems of the network. This project provides for the efficient integration of CMU through interface analysis, schedule management and disconnect resolution between CMU and over twenty other Integrated TW/AA systems and future program upgrades as required to support the Integrated TW/AA network's continually evolving system-of-systems (e.g., Space-Based Infrared System) and changes driven by new missions/threats.

(U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition

## (U) FY 1997

(U) \$6,772 Systems Engineering Integration (SEIT): Provided operation integration of CMU Phase 3 installation, check-out, test and assessment; maintained program schedule; identified, tracked and resolved CMU disconnects  
 (U) \$2,307 Technical Performance Engineering (TPE): Maintained CMU technical baseline; evaluated performance and tracked to prescribed requirements; provided system engineering for Phase 3, and accomplished systems engineering studies for proposed ITW/AA system improvements.  
 (U) \$9,079 Total

## (U) FY 1998

- (U) \$2,115 SEIT: Provide operation integration of CMU Phase 4 installation, check-out, test and assessment; maintain program schedule; identify, track and resolve disconnects within the ITW/AA system.  
 - (U) \$2,646 Future Plans: Manages planned incremental capability modifications to NCMC-TW/AA systems.  
 - (U) \$4,761 Total

## (U) FY 1999

- (U) \$1,703 SEIT: Integrated Mission IOT&E for CMU Phase 3  
 - (U) \$2,168 Future Plans: Manages planned incremental capability modifications to NCMC-TW/AA systems.  
 - (U) \$2,865 AF long range planning "jump start" funding for command and control prototyping  
 - (U) \$6,736 Total

Project 3881

Page 10 of 16 Pages

Exhibit R-2 (PE 0305906F)

1676

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

0305906F NCMC-TW/AA Systems

PROJECT

3881

## 7 - Operational System Development

SEIT, TPE, and Future Plans are stand alone contracts

(U) B. Program Change Summary (\$ in Thousands)

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. Omnibus or Other Above Threshold Reprogram

c. Below Threshold Reprogramming

d. Rescissions

e. Other (Project realignment)

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submission FY1999 President's Budget

FY 1997	FY 1998	FY 1999	Total
8,800	5,132	3,871	Continuing
5,562	5,132		
	-371		
-116			
3,633		2,865	
9,079	4,761	6,736	Continuing

## (U) Change Summary Explanation (\$ in Thousands):

Funding: Project realignment reflects a transfer of 3,633 from project 3880 to 3881 in FY97. FY99 increase of 2,865 for CSAF - directed AF LRP "jump start" of Space C2 prototyping.

Schedule: No change.

Technical: No change.

(U) C. Other Program Funding Summary (\$ in Thousands)

(U) Not Applicable.

(U) D. Schedule Profile

(U) Not Applicable. This is a sustaining engineering effort that supports project 3880 with no distinct milestones.

Project 3881

Page 11 of 16 Pages

Exhibit R-2 (PE 0305906F)

1677

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

3881

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Command and control long range planning			2,865
(U) Major Contract Incremental Funding	0		
(U) Award/Performance Fee	0		
(U) CMTS Systems Integration	0		
(U) Interface Control System Development			
(U) SPO Support			
(U) MITRE	4,992	4,200	3,406
(U) TEMS/WSI	3,985	561	465
(U) Program Support	102	0	0
(U) Total	9,079	4,761	6,736

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	--------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

Product Development Organizations

DISA	MIPR	Apr 96	1,328	1,328	1,328	0	0	0	Cont	Cont
LORAL Aerospace Co Springs, CO	C/CPiF/AF	Jun 95	6,390	6,390	6,390	0	0	0	Cont	Cont
TBD	TBD	TBD	TBD	TBD	0	0	0	2,865	Cont	Cont
<u>Support and Management Organizations</u>										
MITRE	CPFF	Oct 95	N/A	N/A	43,985	4,992	4,200	3,406	Cont	Cont
TEMS	CPAF	Oct 95	N/A	N/A	27,419	3,985	561	465	Cont	Cont

Project 3881

Page 12 of 16 Pages

Exhibit R-3 (PE 0305906F)

1678

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

3881

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Program Support	N/A	Nov 95	N/A	N/A	6,962	102	0	0	Cont	Cont
Prime Contractors	(Various)				812	0	0	0	TBD	TBD

Test and Evaluation Organizations

N/A

Government Furnished Property:  
Not Applicable.

	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program Cont
Subtotal Product Development	7,718			2,865	Cont	Cont
Subtotal Support and Management	79,178	9,079	4,761	3,871	Cont	Cont
Subtotal Test and Evaluation						
Total Project	86,896	9,079	4,761	6,736	Cont	Cont

Project 3881

Page 13 of 16 Pages

Exhibit R-3 (PE 0305906F)

1679

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305906F NCMC-TW/AA Systems

4409

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4409 Legacy Interfaces	4,754	1,417	1,024	0	0	0	0	0	47,602

(U) A. Mission Description and Budget Item Justification

The FY95 Appropriations Conference Committee transferred \$41.5M from the O&M Critical Space Contract Operations Line to the RDT&E R-1 line in this program element. Congress realigned these funds from O&M to RDT&E to identify the costs associated with CMU software development upgrades to the CMU program. To clearly account for this funding, this project, Legacy Interfaces, was established. This project provides funding for software development upgrades to the CMU program and for direct mission software support to meet operational needs.

(U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition

## (U) FY 1997

(U) \$500 Provided SPADOC software support/upgrades

(U) \$1,344

(U) \$2,910 Provided warning system software upgrades for space, communications, and missile warning systems at Cheyenne Mountain

(U) \$ 4,754 Total

## (U) FY 1998

(U) \$1,417 Provide Cheyenne Mountain software engineering support/upgrades

(U) \$1,417 Total

## (U) FY 1999

(U) \$1,024 Provide Cheyenne Mountain software engineering support/upgrades

(U) \$1,024 Total

Project 4409

Page 14 of 16 Pages

Exhibit R-2 (PE 0305906F)

1680

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

4409

(U) **B. Program Change Summary (\$ in Thousands)**

(U) Previous President's Budget (FY1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Gen Reductions

b. SBIR

c. Below Threshold Reprogramming

d. Rescissions

e. Other (Project Realignment)

(U) Adjustment to budget years since FY1998 PB

(U) Current Budget Submission (FY1999 President's Budget

(U) Change Summary Explanation (\$ in Thousands):

Funding: FY97 project realignment (+98) from project 3880.

Schedule: No change.

Technical: No change.

(U) **C. Other Program Funding Summary (\$ in Thousands)**

(U) Not Applicable.

(U) **D. Schedule Profile**

	FY 1997			FY 1998			FY 1999		
	1	2	3	1	2	3	1	2	3
(U) SPADOC software support/upgrades	X			X			X		
(U) Warning systems software support/upgrades									
(U) CMC Test Support									
(U) CMAS software upgrades									

FY 1999

2 3 4

4

Project 4409

Page 15 of 16 Pages

Exhibit R-2 (PE 0305906F)

1681

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305906F NCMC-TW/AA Systems

4409

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Major Contract Incremental Funding	4,279		
(U) Award/Performance Fee	475		
(U) Total Legacy Interfaces Project	4,754	1,417	1,025

Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Lockheed-Martin	CP/AF	Oct 94	12,024	12,024	8,852	500	0	0	0	9,352
CO Springs CO										
E-Systems	FPIF/AF	Oct 94	1,880	1,880	1,880	0	0	0	0	1,880
St Petersburg FL										
Kaman Sciences	CP/AF	Oct 94	18,166	18,166	15,304	2,910	0	0	0	18,214
CO Springs CO										
Kaman Sciences	CP/AF	Oct 94	12,520	12,520	11,127	1,344	0	0	0	12,471
CO Springs CO										
Navy/NISE	MIPR	Sep 95	3,244	3,244	3,244	0	0	0	0	3,244
							1,417	1,024		2,441

Support and Management Organizations: TBDTest and Evaluation Organizations: N/AGovernment Furnished Property: N/A

Subtotal Product Development	40,407	4,754	0	0	00	45,161
Subtotal Support and Management	0	0	1,417	1,024	0	2,441
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	40,407	4,754	1,417	1,024	0	47,602

Project 4409

Page 16 of 16 Pages

Exhibit R-3 (PE 0305906F)

1682

UNCLASSIFIED

PE NUMBER: 0305910F

PE TITLE: Spacetrack (Space)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0305910F Spacetrack (Space)									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		32,794	38,432	39,532	28,121	0	0	0	0	260,738	
4239 Air Force Maui Optical Station		6,297	0	0	0	0	0	0	0	27,413	
4241 Advanced Electro Optical System (AEOS)		19,277	28,533	17,528	0	0	0	0	0	166,081	
4279 Have Stare Radar		7,220	9,899	22,004	28,121	0	0	0	0	67,244	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

\* Note: AMOS funding combined into AEOS BPAC beginning in FY98.

**(U) A. Mission Description and Budget Item Justification**

The SPACETRACK program element represents a worldwide Space Surveillance Network (SSN) of dedicated, collateral, and contributing electro-optical, passive radio frequency (RF) and radar sensors. The SSN is tasked to provide space object identification and cataloging, satellite attack warning, timely notification to U.S. forces of satellite fly-over, space treaty monitoring, and scientific and technical intelligence gathering. The continued increase in satellite and orbital debris populations, as well as the increasing diversity in launch trajectories, non-standard orbits, and geosynchronous altitudes, necessitates continued modernization of the SSN to meet existing and future requirements and ensure their cost-effective supportability. The Image Information Processing Center and Supercomputing facility for the Air Force Maui Optical Station (AMOS), were transferred to PE 0602601F in FY92. The resources and responsibility for completing the HAVE STARE Radar System development were transferred to SPACETRACK from an intelligence program per Congressional direction in FY93. All of these projects are Budget Activity 7, Operational Systems Development, because they involve development of or modifications to operational sensor network sites.

**(U) Acquisition Strategy:**

Except for the Congressionally-directed Maui Space Surveillance System facilities expansion project, Advanced Electro Optical System (AEOS), and the HAVE STARE radar acquisition, the other projects in this Program Element are competitive sustaining engineering infrastructure support operations and maintenance efforts.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0305910F Spacetrack (Space)

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget (FY 1998 PB)	31,851	28,573	14,147
(U) Appropriated Value	33,867	43,073	
(U) Adjustments to Appropriated Value			
a. Cong Gen Reductions	-1,190	-3,679	
b. SBIR	-826	-962	
c. Omnibus or Other Above Threshold Reprogram	-1,000		
d. Below Threshold Reprogramming	1,996		
e. Rescission	-53		
(U) Adjustments to Budget Years Since FY 1998 PB			25,385
(U) Current Budget Submit/FY1999 President's Budget	32,794	38,432	39,532

## (U) Change Summary Explanation:

Funding: FY 99 adjustments - - Air Force funding increase continues the HAVE STARE project (7,857). OSD added funding for the AEOS project (17,528).  
 Schedule: None.  
 Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement	10,692	7,181	1,829	311	3,862	3,844	3,826	Cont	Cont
(U) Electronic and Telecommunications Equipment (BA 63, P-68)									

**Related RDT&E:** (U) Program Element #0305906F, NORAD Cheyenne Mountain Complex Tactical Warning/Attack Assessment System of Systems.

## (U) D. Schedule Profile

	FY 1997				FY 1998				FY 1999			
	1	2	3	4	1	2	3	4	1	2	3	4
(U) AEOS telescope/facility												
(U) Factory acceptance/occupancy facility				X								
(U) Telescope Factory Acceptance				X								
(U) Radiometer Acceptance									X			

Page 2 of 16 Pages

Exhibit R-2 (PE 0305910F)

1684

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE											
7 - Operational System Development		0305910F Spacetrack (Space)											
		FY 1997			FY 1998			FY 1999					
		1	2	3	4	1	2	3	4	1	2	3	4
(U) Long Wave Imager Acceptance													
(U) Observatory Control Sys Acceptance												X	
(U) Adaptive Optics System Acceptance													X
(U) HAVE STARE Radar													
(U) Contract Modification (due to delayed site selection decision)													
(U) Deinstall Test Site										X			
(U) Reinstall at Operational Site												X	

Page 3 of 16 Pages

Exhibit R-2 (PE 0305910F)

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4239

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4239 Air Force Maui Optical Station	6,297	0	0	0	0	0	0	0	27,413
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

\* Note: AMOS funding continues in AEOS BPAC beginning in FY98.

(U) A. Mission Description and Budget Item Justification

AMOS serves as a testbed for electro-optics and imaging technology supporting government and academic communities. It also provides operational data to Air Force Space Command: infrared signature data and compensated, imaging data used for space object identification and mission/payload assessment. Other government labs, national science foundations and other scientific agencies' use of this facility are funded separately. This project is in Budget Activity 7, Operational Systems Development, because it involves a level-of-effort for sustained engineering support for development of, or modifications to, an operational SPACETRACK network site.

(U) FY 1997

(U) \$6,297

Continued support to Maui Space Surveillance System (MSSS) R&D upgrades, development of MSSS observatory control system, and operational transition of AEOS. Single end item, funding transfers to AEOS BPAC in FY98.

(U) FY 1998

(U) \$0

Not Applicable

(U) FY 1999

(U) \$0

Not Applicable

Project 4239

Page 4 of 16 Pages

Exhibit R-2 (PE 0305910F)

1686

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4239

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	6,297	0	0	27,413
(U) Appropriated Value	6,500			
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-203			
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit (FY1999 President's Budget)	6,297	0	0	27,413

## (U) Change Summary Explanation:

Funding: Starting in FY1998, Project 4239 (AMOS) was combined with Project 4241 (AEOS).  
 Schedule: None.  
 Technical: None.

(U) C. Other Program Funding Summary (\$ in Thousands)  
Not Applicable.(U) D. Schedule Profile  
Not Applicable.

Project 4239

Page 5 of 16 Pages

Exhibit R-2 (PE 0305910F)

1687

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305910F Spacetrack (Space)

4239

## (U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Level of effort support	6,297	0	0
(U) Total	6,297	0	0

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget			Total Program	
						FY 1997	FY 1998	FY 1999		
<b>Product Development Organizations</b>										
RTS, Kihei, HI	C/CPAF/AF	Dec 95	N/A	N/A	4,610	4,672	0	0	9,282	
RPS, Kihei, HI	C/CPAF/AF	Oct 90	N/A	N/A	12,610	0	0	0	12,610	
<b>Support and Management Organizations</b>										
W. J. Schafer	C/CPFF	Feb 92	N/A	N/A	136	94	0	0	230	
Albuquerque, NM										
S Systems Corp	C/CPFF	Jul 93	N/A	N/A	132	0	0	0	132	
Albuquerque, NM										
Program Support	Various				3,628	1,531	0	0	5,159	
<b>Test and Evaluation Organizations Not Applicable</b>										
<b>Government Furnished Property: Not Applicable.</b>										
Subtotal Product Development						17,220	4,672	0	0	21,892
Subtotal Support and Management						3,896	1,625	0	0	5,521
Subtotal Test and Evaluation						0	0	0	0	0
Total						21,116	6,297	0	0	27,413

Project 4239

Page 6 of 16 Pages

Exhibit R-3 (PE 0305910F)

1688

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4241

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4241 Advanced Electro Optical System (AEOS)	19,277	28,533	17,528	0	0	0	0	0	166,081
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

\*Note: FY98 funding includes AMOS efforts (AMOS funds transferred to AEOS BPAC for FY98).

(U) A. Mission Description and Budget Item Justification

The Advanced Electro-Optical System (AEOS) is a 3.67 meter telescope addition to the Air Force Maui Optical Station (AMOS). The AEOS program was initiated in FY91 per Congressional direction. Congress continued to appropriate funding for this project in FY93, FY94, FY95, FY96, and FY 97. The Air Force budgeted for the continuation of AEOS in FY 97 and FY 98. This project is in Budget Activity 7, Operational Systems Development, because it involves sustained engineering support for development of, or modifications to, an operational SPACETRACK network site.

(U) Acquisition Strategy:

Except for the Congressionally-directed Maui Space Surveillance System facilities expansion project, Advanced Electro Optical System (AEOS), and the HAVE STARE radar acquisition, the other projects in this Program Element are competitive sustaining engineering infrastructure support operations and maintenance efforts.

## (U) FY 1997:

- (U) \$11,297 Continue telescope development incremental funding.
- (U) \$6,280 Continue atmospheric characterization studies, spectrograph research, development of adaptive optics system, and sensors development.
- (U) \$1,700 Continue Spectrograph research
- (U) \$19,277 Total

## (U) FY 1998

- (U) \$17,048 Continue development of adaptive optics, sensors, and integration of the telescope system, ,
- (U) \$1,385 Purchase pre-operational spares
- (U) \$4,800 continue development of AEOS and MSSS observatory control system, and.
- (U) \$5,300 R&D upgrades to MSSS
- (U) \$28,533 Total

Project 4241

Page 7 of 16 Pages

Exhibit R-2 (PE 0305910F)

1689

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4241

(U) FY 1999

- (U) \$12,665 Continue integration of Adaptive Optics System and operational transition of AEOS
- (U) \$1,565 Complete the MSSS Observatory Control System
- (U) \$3,298 R&D upgrades to the MSSS
- (U) \$17,528 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget (FY 1998 PB)	20,281	23,800	0	
(U) Appropriated Value	21,927	31,300		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-820	-2,053		
b. SBIR	-826	-714		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming *	-4			
e. Rescissions				
f. Other	-1,000			
(U) Adjustments to Budget Years Since FY 1998 PB			17,528	
(U) Current Budget Submit (FY1999 President's Budget)	19,277	28,533	17,528	TBD

## (U) Change Summary Explanation:

Funding: Congress added 7,500 in FY98 for development of and modifications to the operational sensor network site. OSD budgeted for project continuation in FY99.

Schedule: Facility delays due to weather impacts/dome installation. Delays in sensor delivery due to subcontractor delivery and technical problems.

Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003
Other Procurement,	10,692	7,181	1,829	311	3,862	3,844	3,826
(Electronics and Telecommunications Equipment (BA 63, P-68)							

Related RDT&E: (U) Program Element #0305906F, NORAD Cheyenne Mountain Complex Tactical Warning/Attack Assessment System of Systems.

Project 4241

Page 8 of 16 Pages

Exhibit R-2 (PE 0305910F)

1690

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## PROJECT

4241

## 7 - Operational System Development

**(U) D. Schedule Profile**

[illegible]

Project 4241

Page 9 of 16 Pages

**Exhibit R-2 (PE 0305910F)**

1691

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4241

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Directed level of effort for AEOS Maui facilities expansion	20,277	23,800	0
(U) Total	20,277	23,800	0

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organization</u>										
Kiewit Pacific Co	C/FFP/AF	Aug 94	21,000	21,302	20,249	1,053	0	0	0	21,302
Kapolei, HI										
Contraves USA	C/FFP/AF	Dec 91	23,000	23,618	21,741	1,192	685	0	0	23,618
Pittsburgh, PA										
HDOS	C/CPAF/AF	Aug 94	31,000	37,368	11,592	7,596	10,015	8,165	0	37,368
Danbury, CT										
COMSAT RSI, Inc	C/FFP/AF	Aug 95	7,000	7,250	6,498	752	0	0	0	7,250
Clarksburg, MD										
Mission Research Corp	C/CPIF/AF	Jul 95	4,000	5,085	3,314	696	850	225	0	5,085
Santa Barbara, CA										
Hughes Aircraft Co	C/CPIF/AF	Sep 95	5,000	6,804	3,278	667	2,664	195	0	6,804
El Segundo, CA										
RTS	C/CPAF/AF	Sep 95	N/A	24,569	2,906	3,050	10,945	6,668	0	23,569
Kihei, Maui, HI										
RPS	C/CPAF/AF	Oct 90	N/A	12,933	12,933	0	0	0	0	12,933
Kihei, Maui, HI										
UH	C/CR/AF	Oct 96	3,400	1,700	0	1,700*	0	0	0	1,700
Maui, HI										

\*Congressional directed Spectrograph Research Support and Management Organizations

Project 4241

Page 10 of 16 Pages

Exhibit R-3 (PE 0305910F)

1692

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY		PE NUMBER AND TITLE										PROJECT
7 - Operational System Development		0305910F Spacetrack (Space)										4241
Contract or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Logicon RDA	C/CPAF/AF	Oct 95	N/A	N/A	1,177	700	580	250	TBD	2,707		
Albuquerque, NM												
Logicon RDA	C/CPAF/AF	Oct 93	N/A	N/A	3,360	0	0	0	TBD	3,360		
Albuquerque, NM												
MIT/LL	SS	Oct 93	N/A	N/A	2,066	200	300	300	TBD	2,866		
Cambridge, MA												
S. Systems Corp	C/CPFF/AF	Jul 93	N/A	N/A	2,976	0	0	0	TBD	2,976		
Albuquerque, NM												
ARMY COE	SS	Jan 95	N/A	N/A	1,225	392	0	0	TBD	1,617		
Haleakala, Maui, HI												
WJS	SS	Oct 97	N/A	N/A	N/A	0	259	150	TBD	409		
Albuquerque, NM												
Program Office	Various	N/A	N/A	N/A	7,428	1,279	2,235	1,575	TBD	12,517		
<u>Test and Evaluation Organizations</u>												
N/A												
<u>Government Furnished Property:</u>												
N/A												
Subtotal Product Development												
Subtotal Support and Management												
Subtotal Test and Evaluation												
Total												
					82,511	16,706	25,418	15,2530	TBD	125,635		
					18,232	2,571	3,115	2,275	TBD	26,193		
					0	0	0	0	0	0		
					100,743	19,277	28,533	17,528	TBD	166,081		
Project 4241												
Page 11 of 16 Pages												
Exhibit R-3 (PE 0305910F)												

Project 4241

Page 11 of 16 Pages

Exhibit R-3 (PE 0305910F)

1693

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		PE NUMBER AND TITLE							DATE	PROJECT
7 - Operational System Development		0305910F Spacetrack (Space)							February 1998	4279
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4279 Have Stare Radar		7,220	9,899	22,004	28,121	0	0	0	0	67,244
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0
<p>(U) <b>A. Mission Description and Budget Item Justification</b>  The HAVE STARE radar was transferred from the intelligence budget in FY93 at the direction of Congress. The Air Force has identified a requirement for the HAVE STARE system and has programmed funding in this program element to complete development and to deploy the system. The HAVE STARE radar is a high resolution X-band tracking and imaging radar with a 27 meter mechanical dish antenna. The HAVE STARE system will be deployed as a dedicated space surveillance sensor to support the mission of space object catalog maintenance of deep space objects and mission payload assessment. The HAVE STARE system will retain its original design features and their inherent potential to support other missions. While at the Vandenberg AFB test site, HAVE STARE will support NMD X-band radar technology studies, hardware prototyping and demonstrations. This system is currently in the EMD phase leading to an IOC in FY00.</p> <p>(U) <b>Acquisition Strategy:</b>  Except for the Congressionally-directed Maui Space Surveillance System facilities expansion project, Advanced Electro Optical System (AEOS), and the HAVE STARE radar acquisition, the other projects in this Program Element are competitive sustaining engineering infrastructure support operations and maintenance efforts.</p> <p>(U) <b>FY 1997</b>  - (U) \$4,746 Continued in-CONUS developmental and integration testing and evaluation at Vandenberg AFB, CA.  - (U) \$1,474 Continued site preparation at classified operational deployment location.  - (U) \$1,000 Congressionally approved Omnibus source.  - (U) \$7,220 Total</p> <p>(U) <b>FY 1998</b>  - (U) \$2,400 Continue radar development incremental funding.  - (U) \$1,614 Continue preparations for deployment  - (U) \$5,885 Conduct X-band radar technology prototyping, studies, and demonstrations  - (U) \$9,899 Total</p> <p>(U) <b>FY 1999</b>  - (U) \$2,200 Continue radar development incremental funding.  - (U) \$5,000 Continue facility preparations</p>										

Project 4279

Page 12 of 16 Pages

Exhibit R-2 (PE 0305910F)

1694

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4279

- (U) \$12,804 Deploy and re-install program equipment  
 - (U) \$2,000 Logistics and training  
 - (U) \$22,004 Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost *
(U) Previous President's Budget (FY 1998 PB)	5,273	4,773	14,147	
(U) Appropriated Value	5,440	11,773		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions		-1,626		
b. SBIR	-167	-248		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming **	2,000			
e. Rescissions	-53			
(U) Adjustments to Budget Years Since FY 1998 PB			7,857	
(U) Current Budget Submit (FY 1999 President's Budget)	7,220**	9,899	22,004	*

\* Complete prior year data not available; program transferred from the intelligence budget in FY93 at the direction of Congress.  
 \*\* Total includes \$1.000M approved by Congress as an Omnibus source.

## (U) Change Summary Explanation:

Funding: 2,000 was reprogrammed into this PE in FY97 to fund the Space Surveillance modification effort. Congress added 7,000 in FY98 for NMD testing (X-Band radar technology studies, prototyping and demonstration). FY99 increase funds additional site preparation costs.  
 Schedule: Project delayed due to delay in overseas site selection and previously withheld funding.  
 Technical: Development delayed due to withheld funding based on delayed siting decision.

(U) C. Other Program Funding Summary (\$ in Thousands)

(U) None.

Related RDT&E: (U) Program Element #0305906F, NORAD Cheyenne Mountain Complex Tactical Warning/Attack Assessment System of Systems.

Project 4279

Page 13 of 16 Pages

Exhibit R-2 (PE 0305910F)

1695

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998	
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT		
7 - Operational System Development	0305910F Spacetrack (Space)	4279		
(U) D. <u>Schedule Profile</u>				
		FY 1997	FY 1998	FY 1999
		1 2 3 4	1 2 3 4	1 2 3 4
HAVE STARE Radar				
(U) Contract Modification (due to delayed site selection decision)		X		
(U) Deinstall Test Site			X	
(U) Reinstall at Operational Site				X

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305910F Spacetrack (Space)

4279

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) System Development	4,911	1,100	2,200
(U) Site Preparation	40	641	4,000
(U) Deployment			10,357
(U) Logistics and Training		200	1,700
(U) X-Band Radar Test Support		3,025	3,747
(U) SPO Support	1,269	4,933	
(U) Congressionally Approved Omnibus Source	1,000		
(U) Total	7,220	9,899	22,004

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

\* Prior year data not available; program transferred from the intelligence budget in FY 93 at the direction of Congress

Product Development Organizations

Raytheon Elec Sys	C/CPI/AF	Mar 91	21,000	21,311	*	4,911	5,774	13,657	TBD	Continuing
Sudbury, MA					*	40	800	4,600	TBD	Continuing
Misc	Various	Various								

Support and Management Organizations

MITRE	SS/PR	Oct 95	N/A	N/A	*	420	1,200	700	TBD	Continuing
TEMS	C/PR	Various	N/A	N/A	*	178	300	300	TBD	Continuing
SETA	C/PR	Oct 97	N/A	N/A	*	324	925	400	TBD	Continuing
Misc	Various	Various	N/A	N/A	*	347	900	2,347	TBD	Continuing

Project 4279

Page 15 of 16 Pages

Exhibit R-3 (PE 0305910F)

1697

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0305910F Spacetrack (Space)	4279	
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>			
<u>Test and Evaluation Organizations</u>			
None			
<u>Approved Omnibus Source</u>			
	1,000		
<u>Government Furnished Property: Not Applicable.</u>			
Subtotal Product Development	*	4,951	18,257
Subtotal Support and Management	*	1,269	3,747
Subtotal Test and Evaluation	*	0	0
Approved Omnibus Source		1,000	
Total Project	*	7,220	22,004
		9,899	TBD
			Continuing

Project 4279

Page 16 of 16 Pages

Exhibit R-3 (PE 0305910F)

1698

UNCLASSIFIED

PE NUMBER: 0305911F

UNCLASSIFIED

PE TITLE: Defense Support Program (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
BUDGET ACTIVITY										February 1998
PE NUMBER AND TITLE										
0305911F Defense Support Program (Space)										
7 - Operational System Development										
	COST (In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		24,668	20,689	12,037	7,595	7,587	4,462	4,760	0	1,941,972
3615 Shield/Alert		9,526	8,125	8,432	3,509	4,060	0	0	0	59,499
3624 Defense Support Program		15,142	12,564	3,605	4,086	3,527	4,462	4,760	0	1,882,473
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification**  
 The Defense Support Program (DSP) is a system of satellites in geostationary orbits, fixed and mobile ground processing stations, one multi-purpose facility, and a ground communications network. DSP's primary mission is to provide tactical warning and limited attack assessment of a ballistic missile attack. Shield/ALERT (Attack and Launch Early Reporting to Theater) is a ground station mission processing upgrade which exploits inherent satellite capability to provide theater missile warning and cueing. DSP is an operational system and is funded in Budget Activity 7, Operational Systems Support.

(U) **Acquisition Strategy:**  
 The ALERT squadron was activated 1 Oct 94 and achieved Initial Operating Capability 10 Mar 95. Further Shield RDT&E efforts are required to meet Air Force Space Command (AFSPC) Full Operational Capability requirements and to use as the pathfinder for the first increment of the ground consolidation.

(U) **B. Program Change Summary (\$ in Thousands)**

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget FY 1998 PB	25,009	23,193	39,946	2,054,500
(U) Appropriated Value	26,397	23,193		
(U) Adjustments to Appropriated Value	-830	-1,959		
a. Congressional General Reduction/Add	-558	-545		
b. SBIR/Other				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming (BTR)	-300			
e. Rescissions	-41			
(U) Adjustments to Budget Years Since FY 1998 PB			-27,909	
(U) Current Budget Submit/FY 1999 President's Budget	24,668	20,689	12,037	1,941,972

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

## 0305911F Defense Support Program (Space)

(U) Change Summary Explanation:

Funding: \$300K FY97 RDT&E BTR to other AF priorities and \$41K FY97 RDT&E Bosnia recission.  
 \$66K FY98 RDT&E pending reprogramming to fund higher priority AF requirements.

FY99 adjustment funded higher priority Air Force, Department of Defense program requirements and Nonpay inflation adjustment.  
 Schedule: FY98/FY99 launch schedule adjusted to match current AFSPC launch manifest.

Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
(U) Missile Procurement (PE 305911F, BA-05, P-28)	60,357	104,841	89,904	113,515	111,537	103,680	106,491	272,000	7,213,100
(U) Other Procurement (PE 305911F, BA-65, P-N/A)	3,386	181	202	14	6	0	0	0	1,201,700

## Related RDT&amp;E:

(U) PE 603441F - SBIRS Dem/Val	252,492	202,433	160,262	154,133	115,398	0	0	0	1,432,558
(U) PE 604442F - SBIRS Low EMD	0	0	33,328	79,064	148,749	420,206	823,950	5,938,759	7,444,056
(U) PE 604441F - SBIR High EMD	193,018	316,467	538,438	564,239	395,905	269,798	143,059	102,566	2,801,661

## (U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	1
(U) DSP Satellite Deliveries									
(U) Begin ALERT Military Org. Maint.	X								
(U) Final ALERT Hardware Installation		X							
(U) SBIRS MCS Operational (Increment I)									X
(U) DSP Satellite Launches									X

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305911F Defense Support Program (Space)								3615	
COST (In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
3615	Shield/Alert	9,526	8,125	8,432	3,509	4,060	0	0	0	59,499	
<p>(U) A. <u>Mission Description and Budget Item Justification</u></p> <p>The Shield project identified changes to existing DSP processing to enhance theater missile defense warning capabilities. These enhancements will facilitate more timely and accurate detection, identification, location and tracking of theater missile threats. This data supports attack operations/counterforce operations by providing accurate, timely launch point prediction. This information will also support active and passive defense forces by providing target cueing data and precise impact point prediction. The Air Force will transition these enhancements to ALERT, an operational system that provides continuous real-time warning to the warfighter.</p> <p>(U) <u>Acquisition Strategy:</u></p> <p>The ALERT squadron was activated on 1 Oct 94 with an ALERT Initial Operating Capability reached on 10 Mar 95. Further Shield RDT&amp;E efforts will be required to meet the Air Force Space Command Full Operational Capability requirements and for use as the pathfinder for SBIRS ground consolidation.</p> <p>(U) <u>FY 1997 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$4,629 Continued engineering task development to prototype and implement ALERT capabilities leading up to Increment I.</li> <li>- (U) \$2,672 Continued SBIRS ground consolidation developmental test and evaluation.</li> <li>- (U) \$2,225 Technical analysis and independent verification and validation of contractor by FFRDC.</li> <li>- (U) \$9,526 Total</li> </ul> <p>(U) <u>FY 1998 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$4,557 Continue engineering task development to prototype and implement ALERT capabilities leading up to Increment I.</li> <li>- (U) \$2,239 Continue SBIRS ground consolidation developmental test and evaluation.</li> <li>- (U) \$2,194 Technical analysis and independent verification and validation of contractor by FFRDC.</li> <li>- (U) \$931 Funds will transfer from BPAC 3624 to BPAC 3615 within PE 35911F to correct erroneous Shield/ALERT reduction.</li> <li>- (U) \$66 Pending reprogramming to fund higher priority AF requirements.</li> <li>- (U) \$8,125 Total</li> </ul> <p>(U) <u>FY 1999 (\$ in Thousands):</u></p> <ul style="list-style-type: none"> <li>- (U) \$5,175 Continue engineering task development to prototype and implement ALERT capabilities leading up to Increment I.</li> <li>- (U) \$3,440 Continue SBIRS ground consolidation developmental test and evaluation.</li> <li>- (U) \$1,931 Technical analysis and independent verification and validation of contractor by FFRDC.</li> <li>- (U) \$2,114 Funds will transfer from BPAC 3624 to BPAC 3615 within PE 35911F to correct erroneous Shield/ALERT reduction.</li> <li>- (U) \$8,432 Total</li> </ul>											

Exhibit R-2 (PE 0305911F)

Page 3 of 13 Pages

Project 3615

1701

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305911F Defense Support Program (Space)

3615

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget/FY 1998 PB	9,089	9,108	8,602	56,697
(U) Appropriated Value	9,089	9,108		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions		-864		
b. SBIR		-119		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming	437			
(U) Adjustments to Budget Years Since FY 1998 PB			-170	
(U) Current Budget Submit/FY 1999 President's Budget	9,526	8,125	8,432	59,499

## (U) Change Summary Explanation:

Funding: \$437K FY97 BTR from BPAC 3624 within this program element for Version 12 User's Manuals and Theater Situational Analyst (TSA) Training.  
 \$66K FY98 RDT&E pending reprogramming to fund higher priority AF requirements.

FY99 reduction is for Non-Pay Inflation

Schedule: None.

Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
(U) Missile Procurement (PE 305911F, BA-05, P-28)	60,357	104,841	89,904	113,515	111,537	103,680	106,491	272,000	7,213,100
(U) Other Procurement (PE 305911F, BA-65, P-N/A)	3,386	181	202	14	6	0	0	0	1,201,700

## Related RDT&amp;E:

(U) PE 603441F - SBIRS Dem/Val	252,492	202,433	160,262	154,133	115,398	0	0	0	1,432,558
(U) PE 604442F - SBIRS Low EMD	0	0	33,328	79,064	148,749	420,206	823,950	5,938,759	7,444,056
(U) PE 604441F - SBIR High EMD	193,018	316,467	538,438	564,239	395,905	269,798	143,059	102,566	2,801,661

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999
(U) Begin ALERT Military Org. Maint.	1	2	3
(U) Final ALERT Hardware Installation	X		

Project 3615

Page 4 of 13 Pages

Exhibit R-2 (PE 0305911F)

1702

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305911F Defense Support Program (Space)

3615

(U) D. Schedule Profile

1

FY 1997  
2 3

4

FY 1998  
2 3

4

FY 1999  
2 3

4

(U) SBIRS MCS Operational (Increment I)

(U) ALERT Version 12 Operational

(U) ALERT Version 14 Operational

(U) Begin ALERT Military Contractor

Support Organization Transition

(U) Theater Situational Analyst (TSA)

System User's Manual &amp; Training

(U) TSA Transition

X

X

X

X

X

X

Project 3615

Page 5 of 13 Pages

Exhibit R-2 (PE 0305911F)

1703

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305911F Defense Support Program (Space)

3615

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Contractor Engineering Support	835	850	900
(U) Software Development	1,458	1,535	1,825
(U) Program Management Support	1,711	1,740	1,950
(U) Training Development	625	212	500
(U) Developmental Test and Evaluation	2,672	2,239	3,440
(U) Technical Data	0	220	0
(U) FFRDC	2,225	2,194	1,931
(U) Adjustments: (Pending Reprogramming)		-865	-2,114
(U) Total	9,526	8,125	8,432

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or

Government

Performing

Activity

Method/Type

or Funding

Vehicle

Award or

Obligation

Date

Performing

Activity

EAC

Project

Office

EAC

Total

Prior to

FY 1997

Budget

FY 1998

Budget

FY 1999

Complete

Budget to

Complete

Total

Program

Total

Program

Total

Program

Product Development Organizations

Aerojet

CPAF

Aug 92

7,898

487

288

34,268

2,508

33,860

2,508

6,948

239

6,447

5,779

900

7,715

6,769

2,508

33,658

2,508

7,898

487

288

34,268

2,508

33,860

2,508

Support and Management Organizations

Program Office

Support

FFRDC

Dept Air Force

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

N/A

Test and Evaluation Organizations

Not Applicable

Project 3615

Page 6 of 13 Pages

Exhibit R-3 (PE 0305911F)

1704

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305911F Defense Support Program (Space)

3615

## Government Furnished Property:

Contract

Method/Type

Award or

Obligation

Date

Delivery

Date

Total

Prior to

FY 1997

Budget

FY 1997

Budget

FY 1998

Budget

FY 1999

Budget to

Complete

Total

Program

Item

Description

Test Equipment

Aug 94

427

0

0

0

427

Subtotal Product Development

Subtotal Support and Management

Subtotal Government Furnished Equipment

Adjustments: (Pending Reprogrammings)

Total Project

15,860

9,560

427

6,561

2,429

0

8,615

1,931

0

6,769

800

0

44,721

17,330

427

-2,979

59,499

-2,114

8,432

-865

8,125

9,526

Project 3615

Page 7 of 13 Pages

Exhibit R-3 (PE 0305911F)

1705

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

## 0305911F Defense Support Program (Space)

3624

COST (In Thousands)

	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
--	-------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	---------------------	------------

3624 Defense Support Program	15,142	12,564	3,605	4,086	3,527	4,462	4,760	0	1,882,473
------------------------------	--------	--------	-------	-------	-------	-------	-------	---	-----------

(U) A. Mission Description and Budget Item Justification

The Defense Support Program (DSP) system provides a space-based surveillance system to detect and report missile and space launches and nuclear detonations in near real time during pre-, trans-, and post-attack periods. The DSP system consists of a constellation of satellites in geostationary orbits, fixed and mobile ground processing stations, one multi-purpose facility, and a ground communications network. DSP's primary mission is to provide tactical warning and limited attack assessment of a ballistic missile attack. DSP also detects and reports nuclear detonation events and provides information for theater warning and exploitation. This program element funds development to modernize ground stations to ensure continued operability, integration of satellites to launch vehicles, satellites and ground station hardware, procurement, and DSP ground stations operation.

(U) Acquisition Strategy:

DSP is currently sustaining the production of satellites 19 through 23. This sustainment includes post production storage, testing, launch preparation, and on orbit testing. Current contract efforts are required to stretch the support of launch centers to 12 months from the originally contracted 6 month launch centers. Satellite 23 will be the last DSP satellite procured. The Space Based Infrared Systems satellites will replace DSP satellites starting in FY02.

## (U) FY 1997 (\$ in Thousands)

- (U) \$292	Performed DSP Spacecraft developmental engineering efforts
- (U) \$2,321	Performed DSP Sensor developmental engineering efforts
- (U) \$4,790	Other Government costs (Integrated Surveillance Systems concept, Space Long Range Planning, Y2K)
- (U) \$740	Technical analysis and independent verification and validation of contractor by FFRDC
- (U) \$693	Continued acquisition and engineering support.
- (U) \$1,000	Continued acquisition logistics engineering development and sustaining capabilities
- (U) \$3,607	Program office support (TDY's, supplies, computer support, etc)
- (U) \$1,699	Pending reprogramming to fund higher priority AF requirements.
- (U) \$15,142	Total

## (U) FY 1998 (\$ in Thousands)

- (U) \$3,300	Software change to accommodate Year 2000 roll-over.
- (U) \$1,939	Integrated Surveillance Systems Concept
- (U) \$931	Funds will transfer from BPAC 3624 to BPAC 3615 within PE 35911F to correct erroneous Shield/ALERT reduction.
- (U) \$3,395	Other Government Costs (Long Range Planning, ANSER)
- (U) \$2,999	Funds will be reprogrammed to other Air Force programs.
- (U) \$12,564	Total

Project 3624

Page 8 of 13 Pages

Exhibit R-2 (PE 0305911F)

1706

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305911F Defense Support Program (Space)

3624

## (U) FY 1999 (\$ in Thousands):

Integrated Surveillance Systems Concepts  
 - (U) \$200  
 Year 2000 rollover  
 - (U) \$700  
 Funds will transfer from BPAC 3624 to BPAC 3615 within PE 35911F to correct erroneous Shield/ALERT reduction.  
 - (U) \$2,114  
 Other Government Cost  
 - (U) \$591  
 Total  
 - (U) \$3,605

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget/FY 1998 PB	15,920	14,085	31,344	1,997,803
(U) Appropriated Value	15,920	14,085		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions		-1,095		
b. SBIR/Other		-426		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming	-778			
e. Rescissions			-27,739	
(U) Adjustments to Budget Years Since FY 1998 PB	15,142	12,564	3,605	1,882,473
(U) Current Budget Submit/ FY 1999 President's Budget				

## (U) Change Summary Explanation:

Funding: \$300K FY97 RDT&E BTR to other AF priorities, \$437K FY97 RDT&E BTR to BPAC 3615 within this program element, and \$41K FY97 RDT&E to Bosnia rescission. FY99 adjustments funded higher priority Air Force, Department of Defense program requirements and Nonpay inflation.

Schedule: FY98/FY99 launch schedule adjusted to match current AFSPC launch manifest.

Technical: None.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete	Total Cost
(U) Missile Procurement (PE 305911F,	60,357	104,841	89,904	113,515	111,537	103,680	106,491	272,000	7,213,100
BA-05, P-28)									
(U) Other Procurement (PE 305911F,	3,386	181	202	14	6			0	1,201,700
BA-65, P-N/A)									

Project 3624

Page 9 of 13 Pages

Exhibit R-2 (PE 0305911F)

1707

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									
BUDGET ACTIVITY		PE NUMBER AND TITLE						DATE	PROJECT
7 - Operational System Development		0305911F Defense Support Program (Space)						February 1998	3624
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Complete
Related RDT&E:									Total Cost
(U) PE 603441F - SBIRS Dem/Val		252,492	202,433	160,262	154,133	115,398	0	0	1,432,558
(U) PE 604442F - SBIRS Low EMD		0	0	33,328	79,064	148,749	420,206	823,950	5,938,759
(U) PE 604441F - SBIR High EMD		193,018	316,467	538,438	564,239	395,905	269,798	143,059	102,566
(U) D. <u>Schedule Profile</u>									
(U) DSP 23 Satellite delivery		1	2	3	1	4	1	2	4
(U) Satellite launches									
(U) Software Releases			X					X	X
(U) Year 2000 DSP renovation					X	X			
					X	X	X		

Project 3624

Page 10 of 13 Pages

Exhibit R-2 (PE 0305911F)

1708

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		3624
7 - Operational System Development		0305911F Defense Support Program (Space)		
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>		FY 1997	FY 1998	FY 1999
(U) Program Office Support		3,607		
(U) DSP Spacecraft Developmental Engineering efforts		292		
(U) DSP Sensor Developmental Engineering efforts		2,321		
(U) Other Government Costs(See *note)		4,790	8,634	1,491
(U) FFRDC		740		
(U) Continued acquisition and engineering support		693		
(U) Acq Logistics Engineering Development & Sustainment		1,000		
(U) Adjustments		1,699	3,930	2,114
(U) Total		15,142	12,564	3,605
*Note: OGC includes - Integrated Surveillance Systems concept, Space Long Range Planning, Y2K roll-over.				

Project 3624

Page 11 of 13 Pages

Exhibit R-3 (PE 0305911F)

1709

UNCLASSIFIED





UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			0305911F Defense Support Program (Space)		
7 - Operational System Development				3624		
Government Furnished Property:						
Not Applicable						
Subtotal Product Development	134,496	0	0	0	134,496	
Subtotal Support and Management	165,213	13,443	8,634	1,491	16,835	205,616
Subtotal Test and Evaluation	0	0	0	0	0	0
Adjustments: (Pending Reprogramming)		1,699	3,930	2,114		1,542,361
Adjustments: (Previous DSP Contracts)	1,534,618					
Project Total	1,834,327	15,142	12,564	3,605	16,835	1,882,473

Project 3624

Page 13 of 13 Pages

Exhibit R-3 (PE 0305911F)

Project 3624

Page 13 of 13 Pages

Exhibit R-3 (PE 0305911F)

1711

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305913F

UNCLASSIFIED

PE TITLE: Nudet Detection System

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305913F Nudet Detection System								2808	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	Cost to Complete	Total Cost
2808 Nuc Detonation Det Sys (Sensors)		12,818	13,360	13,314	14,352	13,342	12,596	14,704	Continuing	Continuing	Continuing
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

The Nuclear Detonation (NUDET) Detection System (NDS) consists of space, control, and user equipment segments. The space segment consists of NUDET detection sensors on the GPS/NDS satellites. The control segment consists of ground control software and is known as the Integrated Correlation and Display System (ICADS). The user equipment segment consists of the Ground NDS Terminals (GNT). The NDS provides a worldwide, highly survivable capability to detect, locate, and report any nuclear detonations in the earth's atmosphere or in near space in near-real time. The NDS supports NUDET detection requirements for AFSPC (Integrated Tactical Warning and Attack Assessment [ITWAA]), USSTRATCOM (Nuclear Force Management), and AFTAC (Treaty Monitoring). This program is in budget activity 7 - Operational System Development, because it is a post-Milestone III program.

**(U) Acquisition Strategy:**

The NDS Acquisition Strategy is to develop and procure components to sustain the U. S. NDS capability for the GPS Block IIR and IIF satellites. Funding is MIPRed from DoD and Department of Energy (DoE) to Sandia and Los Alamos National Laboratories on an existing contract vehicle.

**(U) FY 1997 (\$ in Thousands):**

- (U) \$ 10,171 Continue ICADS and GNT development
- (U) \$ 900 Continue NDS EMP sensor compatibility and on-orbit qualification
- (U) \$ 1,241 Continue ICADS, GNT and Advanced RADEC Detection Units (ARDU) system engineering and program management
- (U) \$ 506 Continue mission support requirements
- (U) \$ 12,818 Total

**(U) FY 1998 (\$ in Thousands):**

- (U) \$ 6,703 Continue ICADS and GNT development
- (U) \$ 1,160 Continue NDS sensor on-orbit qualification
- (U) \$ 3,808 Continue ICADS, GNT, ARDU, NDS sensors, and GPS/NDS commanding requirements system engineering and program management
- (U) \$ 1,689 Continue mission support requirements
- (U) \$ 13,360 Total

Project 2808

Page 1 of 5 Pages

Exhibit R-2 (PE 0305913F)

1713

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305913F Nudet Detection System

2808

## (U) FY 1999 (\$ in Thousands):

- (U) \$10,271 Continue ICADS and GNT development
- (U) \$ 1,181 Continue NDS sensor on-orbit qualification
- (U) \$ 192 Continue ICADS, GNT, ARDU, NDS sensors, and GPS/NDS commanding requirements system engineering and program management
- (U) \$ 1,670 Continue mission support requirements
- (U) \$13,314 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget (FY1998 PB)	13,018	14,145	14,982	
(U) Appropriated Value	13,623	14,145		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-304	-469		
b. SBIR	-301	-316		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-200			
e. Rescission				
(U) Adjustments to Budget Years Since FY 1998 PB			-1,668	
(U) Current Budget Submit/FY 1999 President's Budget	12,818	13,360	13,314	Continuing
(U) Change Summary Explanation:				

Funding: FY97 Below Threshold Reprogramming (BTR) to PE 030311F, Defense Satellite Communications System (DSCS) (-\$200).  
 FY99 adjustments funded higher priority DoD and AF priorities (-\$1,400) and non-pay inflation (-\$268).  
 Schedule: ICADS IIF delayed 10 months & GNT Phase 2 Delivery delayed from 4QTR 97 to 2QTR 98.  
 Technical: No change.

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost Cont
(U) Operations & Maintenance, (PE 0305913F,	5,161	5,350	5,867	5,978	6,263	8,945	7,687		
BA 1, Operating Forces									

Project 2808

Page 2 of 5 Pages

Exhibit R-2 (PE 0305913F)

1714

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305913F Nudet Detection System

2808

To

Total

Cost

Cont

Compl

Cont

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 2003

FY 1997

FY 1998

FY 1999

FY 2000

FY 2001

FY 2002

FY 20

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305913F Nudet Detection System

2808

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Systems Engineering	1,208	1,277	1,065
(U) Software Development	7,077	6,793	6,452
(U) Software Upgrade	2,000	2,375	3,268
(U) Miscellaneous	1,387	1,534	1,331
(U) Technical Data	92	153	133
(U) Development Test & Evaluation	791	921	799
(U) Program Management Support	263	307	266
(U) Total	12,818	13,360	13,314

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
<b>ICADS:</b>										
Sandia Labs	MIPR*	Jan 96	Cont	Cont	17,094	9,055	5,588	10,271	Cont	Cont
SAIC	Time/Matls	Dec 95	Cont	Cont	1,453	831	489	767	Cont	Cont
<b>GNT:</b>										
Sandia Labs	MIPR*	Jan 96	Cont	Cont	9,128	1,116	1,115	0	Cont	Cont
Intermetrics	CPFF	Dec 93	1,262	1,262	0	0	0	0	0	1,262
SAIC	Time/Matls	Dec 95	Cont	Cont	399	348	330	300	Cont	Cont

Project 2808

Page 4 of 5 Pages

Exhibit R-3 (PE 0305913F)

1716

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE February 1998

PROJECT  
2808BUDGET ACTIVITY  
7 - Operational System DevelopmentPE NUMBER AND TITLE  
0305913F Nudet Detection System

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
GPS Operational Support Contract (GOSC)/NUDET Augmentation Payload (NAP)/Combined X-ray & Dosimeter (CXD) sensors: Sandia Labs SAIC	MIPR Time/Matls	Oct 97 Dec 97	4,287 432	4,287 432	0 0	287 0	3,808 266	192 166	0 0	4,287 432
W-Sensor Support: SRI Los Alamos Sandia Labs	CPFF MIPR MIPR	Aug 94 Jan 96 Oct 94	415 Cont 2,635	415 Cont 2,635	415 2,291 399	0 693 0	0 473 817	0 479 702	0 Cont 717	415 Cont 2,635
Mission	Multiple	N/A	Cont	Cont	2,886	488	474	437	Cont	Cont
Support and Management Organizations Prog Contractual Spt.	Multiple	N/A	1,534	1,534	1,534	0	0	0	0	1,534
Test and Evaluation Organizations OO-ALC/LMCF			9	9	9	0	0	0	0	9
Subtotal Product Development					35,327	12,818	13,360	13,314	Cont	Cont
Subtotal Support and Management					1,534	0	0	0	0	1,534
Subtotal Test and Evaluation					9	0	0	0	0	9
Total Project					36,870	12,818	13,360	13,314	Cont	Cont

Project 2808

Page 5 of 5 Pages

Exhibit R-3 (PE 0305913F)

1717

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305917F

PE TITLE: DoD Space Architect (Space)

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY		PE NUMBER AND TITLE							PROJECT		
7 - Operational System Development		0305917F DoD Space Architect (Space)							4746		
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4746 Space Architect		10,939*	13,480	13,714	14,511	14,428	14,345	14,732	0	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

\*FY97 and earlier funding contained in PE603855F. Funding transferred from PE603855 to this PE in FY1998 - 2003 to consolidate R&D and O&M appropriations into one Program Element.

(U) A. Mission Description and Budget Item Justification - The Under Secretary of Defense for Acquisition and Technology (USD(A&T)) established the DoD Office of the Space Architect (OSA) to consolidate DoD space system architecture development responsibilities into a single organization. The OSA was one of DoD's responses to Congressional concerns regarding DoD space management. This organization works to integrate space system architectures, eliminate unnecessary vertical stovepiping of space programs, achieve efficiencies in acquisition and future operations through space program integration, and thereby improve space support to military operations. The OSA obtains direct support from various space planning and development organizations across the federal government and industry for DoD space architecture planning and development. This program is in Budget Activity 7 because the architecture studies affect the design and acquisition of systems currently under development.

(U) Acquisition Strategy: RDT&E funds will be used to obtain infrastructure support and direct support from various space planning and development organizations across the DoD and industry, including FFRDCs and contracted System Engineering and Technical Assistance (SETA) in direct support of DoD space architecture planning and development. Funds will be applied to existing contract vehicles.

- As primary support, the DoD Space Architect proposes using two existing Space & Missile Center (SMC) contracts for technical support:

- Engineering, Analysis, Design and Development (EADD) Contract; Science Applications International Corporation (SAIC)
- Engineering, Analysis and Design (EAD) Contract; Nichols Research Corporation

- These contracts currently provide support to the Air Force Space and Missile Systems Center long-range planning, conceptual development, and engineering analysis and assessment efforts.

## (U) FY 1997 (\$ in Thousands):

-	(U) \$ 109	Launch Study
-	(U) \$ 133	MILSATCOM Study
-	(U) \$ 3,022	Satellite Operations Studies
-	(U) \$ 2,444	Space Control Study
-	(U) \$ 5,231	Other Architecture Studies and Documentation
-	(U) \$10,939	Total

Project 4746

Page 1 of 5 Pages

Exhibit R-2 (PE 0305917F)

1719

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
<b>7 - Operational System Development</b>	<b>0305917F DoD Space Architect (Space)</b>			<b>4746</b>
(U) FY 1998 (\$ in Thousands):				
- (U) \$ 3,500	Environmental Sensing Study			
- (U) \$ 1,500	Launch Study			
- (U) \$ 100	MILSATCOM Study			
- (U) \$ 625	Satellite Operations Studies			
- (U) \$ 360	Space Control Study			
- (U) \$ 345	SBIRS Study			
- (U) \$ 278	Pos/Nav Study			
- (U) \$ 6,772	Other Architecture Studies and Documentation			
- (U) \$13,480	Total			
(U) FY 1999 (\$ in Thousands):				
- (U) \$ 800	Environmental Sensing Study			
- (U) \$ 600	Launch Study			
- (U) \$ 500	MILSATCOM Study			
- (U) \$ 3,500	Dissemination Study			
- (U) \$ 3,000	Launch Vehicles Study			
- (U) \$ 5,314	Other Architecture Studies and Documentation			
- (U) \$13,714	Total			
(U) B. Program Change Summary (\$ in Thousands)				
(U) Previous President's Budget (FY1998 PB)		FY 1998	FY 1999	
(U) Appropriated Value		14,590	14,590	
(U) Adjustments to Appropriated Value		14,601		
a. Cong Gen Reductions		- 345	-743	
b. SBIR		- 299	-367	
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions		-18		
(U) Adjustments to Budget Years Since FY 1998 PB				-876
(U) Current Budget Submit/FY1999 President's Budget		10,939	13,480	13,714
*Contained in PE603855F				
Project 4746		Page 2 of 5 Pages		Exhibit R-2 (PE 0305917F)

1720

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0305917F DoD Space Architect (Space)	4746	
 (U) Change Summary Explanation: Funding: None. Schedule: None Technical: None			
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>			
(U) N/A			
(U) D. <u>Schedule Profile</u>			
(U) N/A - Level of effort studies			
Project 4746		Exhibit R-2 (PE 0305917F)	

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305917F DoD Space Architect (Space)

4746

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
Environmental Sensing	769	3,500	800
Launch Study	109	1,500	600
MILSATCOM	133	100	500
NSCP	146	150	150
Position-Navigation	273	278	700
Satellite Operations	3,022	625	100
Space Control	2,444	360	100
Dissemination	0	0	3,500
DUSD(S) Studies	2,000	351	0
Other Studies (Congressional, DoD Studies)	0	3,133	756
Launch Vehicles	0	0	3,000
In-House Support	2,043	3,483	3,508
Total	10,939	13,480	13,714

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
None					0	0	0	0	0	Cont
Aerospace	C/CPAF	1993	N/A	N/A		2,046	1,038	1,297	Cont	Cont
ANSER	C/CPFF	1993	N/A	N/A		389	884	584	Cont	Cont
MITRE	C/CPAF	1993	N/A	N/A		632	770	575	Cont	Cont
SAC	C/CPAF	1993	N/A	N/A		550	0	0	Cont	Cont
SEI	C/CPAF	1995	N/A	N/A		40	310	225	Cont	Cont

Product Development Organizations

None					0	0	0	0	0	Cont

Support and Management Organizations

Aerospace	C/CPAF	1993	N/A	N/A		2,046	1,038	1,297	Cont	Cont
ANSER	C/CPFF	1993	N/A	N/A		389	884	584	Cont	Cont
MITRE	C/CPAF	1993	N/A	N/A		632	770	575	Cont	Cont
SAC	C/CPAF	1993	N/A	N/A		550	0	0	Cont	Cont
SEI	C/CPAF	1995	N/A	N/A		40	310	225	Cont	Cont

Project 4746

Page 4 of 5 Pages

Exhibit R-3 (PE 0305917F)

1722

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305917F DoD Space Architect (Space)

4746

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
TASC	C/CPAF	1994	N/A	N/A	0	700	325	325	Cont	Cont
EAD	C/CPAF	1997	N/A	N/A		3,117	5,014	5,122	Cont	Cont
EADD	C/CPAF	1997	N/A	N/A		3,465	5,139	5,586	Cont	Cont
<u>Test and Evaluation Organizations</u>										
None					0	0	0	0	0	
<u>Government Furnished Property: None</u>										
Subtotal Product Development						0	0	0	0	0
Subtotal Support and Management						10,939	13,480	13,714	Cont	Cont
Subtotal Test and Evaluation						0	0	0	0	0
Total Project						10,939	13,480	13,714	Cont	Cont

Project 4746

Page 5 of 5 Pages

Exhibit R-3 (PE 0305917F)

1723

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0305953F

UNCLASSIFIED

PE TITLE: Evolved Expendable Launch Veh (Space)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0305953F Evolved Expendable Launch Veh (Space)								4594	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4594	EELV Prod & Opns	0	0	3,316	3,397	3,477	2,320	766	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification:**

The Evolved Expendable Launch Vehicle (EELV) program is a space launch system development program. The mission of the EELV program is to partner with industry to develop a national launch capability that satisfies the Government's National Mission Model (NMM) requirements and reduces the cost of space launch by at least 25%. The EELV system includes the launch vehicles, infrastructure, support systems, and interfaces. EELV will provide up to two families of launch vehicles that will launch the Government portion of the NMM currently serviced by Titan II, Delta II, Atlas II, and Titan IV. Evolved from current expendable launch systems or components thereof, EELV will support military, intelligence, and civil mission requirements. This program element is in Budget Activity 7, Operational System Development, because it supports operational deployment of a system in production.

**(U) Acquisition Strategy:**

The EELV concept of a family of launch vehicles emphasizes commonality of hardware and infrastructure and economies of scale to enhance production, operations, and support efficiencies. Cost improvements will be achieved through commonality; leveraging the commercial market place; reduction of supporting infrastructure (launch pads, manufacturing facilities, workforce); and optimization of production and launch operations, processes, and rates. EELV is an ongoing competitive program that initially used a rolling downselect acquisition strategy. In August 1995 four initial contracts were awarded for the Low Cost Concept Validation (LCCV) phase. In December 1996 the Air Force downselected to two contractors - Lockheed Martin and Boeing (originally McDonnell Douglas) - for the Pre-Engineering and Manufacturing Development (Pre-EMD) phase. In the summer of 1998, contracts will be awarded for the Engineering and Manufacturing Development (EMD) and Initial Launch Services (ILS) phase. The EMD/ILS approach maintains competition throughout the life of the program, leverages the growing commercial launch market, caps the Government's EMD costs, and allows partnership with industry, while still reducing the program's overall cost to launch the NMM by at least 25% over existing systems. The EELV system will launch the government portion of the NMM through 2020.

**(U) FY 1997 (\$ in Thousands)**

(U) \$0 EELV was funded in PE 0603853F in FY 1997.

Project 4594

Page 1 of 4 Pages

Exhibit R-2 (PE 0305953F)

1725

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0305953F Evolved Expendable Launch Veh  
(Space)

4594

- (U) FY 1998 (\$ in Thousands)  
 - (U) \$0 EELV is funded in PE 0603853F and PE 0604853F in FY 1998.
- (U) FY 1999 (\$ in Thousands)  
 - (U) \$2,280 Start mission planning and non-recurring integration for Space Test Program (TSX-8).  
 - (U) \$1,036 Start mission planning and non-recurring integration for Defense Support Program (DSP) Satellite.  
 - (U) \$3,316 Total

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total
(U) Previous President's Budget (FY 1998 PB)	0	0	3,383	Continuing
(U) Appropriated Value	0	0		
(U) Adjustments to Appropriated Value				
a. Congressional General Reductions				
b. Small Business Innovative Research				
c. Omnibus or other above threshold reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY98 PB			- 67	
(U) Current Budget Submit/FY 1999 President's Budget	0	0	3,316	Continuing

(U) Change Summary Explanation:

- Funding: The FY99 change is an inflation adjustment.
- Schedule: Not Applicable.
- Technical: Not Applicable.

Project 4594

Page 2 of 4 Pages

Exhibit R-2 (PE 0305953F)

1726

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0305953F Evolved Expendable Launch Veh  
(Space)

4594

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Comp	Total
								Cont.	Cont.
(U) Missile Procurement, AF (PE 0305953F) (BA45, P-TBD)				204,576	360,818	359,442	599,717	Cont.	
(U) Missile Procurement, AF (Quantity)	18,600	4,200	4	6	7	11	Cont.	95,100*	
(U) NRO (Non-AF budget)								9,845**	
(U) DARPA (Non-AF budget) (PE 0603226E)									
<u>Related RDT&amp;E:</u>									
(U) EELV Demonstration and Validation (PE 0603853F)	44,263	60,437	0	0	0	0	0	0	173,153
(U) EELV EMD (PE 0604853F)		26,572	280,297	338,319	305,557	244,450	14,822	0	1,210,017

\* Total includes funding in FY96.

\*\* Total includes funding in FY94.

## (U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) Defense Acquisition Board - Milestone II									
(U) Development/Initial Launch Services									
contract awards									
(U) Start mission planning and first time									
integration for the STP TSX mission									
(U) Start mission planning and first time									
integration for DSP									
(U) Start launch vehicle production in 1st									
quarter FY00									

X

X

(U) Start launch vehicle production in 1st  
quarter FY00

Project 4594

Page 3 of 4 Pages

Exhibit R-2 (PE 0305953F)

1727

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4594

7 - Operational System Development

0305953F Evolved Expendable Launch Veh  
(Space)(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Contract	0	0	3,316
(U) Mission Support	0	0	0
(U) Total	0	0	3,316

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Contract

Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Prime Contracts	C/FFP	Jun 98			0	0	0	3,316	Cont.	Cont.
<u>Support and Management Organizations</u>										
					0	0	0	0	0	0
<u>Test and Evaluation Organizations</u>										
Not Applicable					0	0	0	0	0	0
<u>Government Furnished Property: Not Applicable</u>										
Subtotal Product Development					0	0	0	3,316	Cont.	Cont.
Subtotal Support and Management					0	0	0	0	0	0
Subtotal Test and Evaluation					0	0	0	0	0	0
Total Project					0	0	0	3,316	Cont.	Cont.

Project 4594

Page 4 of 4 Pages

Exhibit R-3 (PE 0305953F)

1728

UNCLASSIFIED

PE NUMBER: 0308601F

UNCLASSIFIED

PE TITLE: Modeling and Simulation Support

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0308601F Modeling and Simulation Support									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		1,995	0	1,093	1,088	1,210	1,253	1,358	TBD	Continuing	
1011 Joint Modeling & Simulation Integration Program (JMSIP)		1,995*	0	358	378	397	404	415	TBD	Continuing	
4566 Executive Agent for Air/Space Natural Environment		0	0	735	710	813	849	943	TBD	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

\*FY97 dollars are executed through PE0270601F, USAF Modeling and Simulation, but reported here for consistency.

**(U) A. Mission Description and Budget Item Justification**

This PE includes funding to support and organized growth and management of modeling and simulation (M&S) as the Air Force transitions from numerous legacy models and simulations to emerging DoD standard models and architecture. Numerous models currently exist and are being modified or developed for a broad range of areas including acquisition, analysis, test and evaluation, and training. JMSIP funds the upgrades to R&D funded legacy models selected through a board process. The selection process allows the board to influence the direction of legacy model development and interaction for the entire modeling and simulation community. Emphasis is placed on joint applicability and acceptance. Executive Agent for Air/Space Natural Environment supports M&S information, coordination, and expertise on natural environment representation and their interactions with other environmental representations. In turn, this supports joint wargaming architectures, databases, model development support for Joint Warfare Simulation (JWARS), Joint Simulation System (JSIMS), Joint Modeling and Simulation System (JMASS), and other joint M&S program offices. Primary users will be unified commanders and service components for use in joint exercises involving air, ground, sea, and space campaigns. PE also contains O&M funding for AF portion of Aggregate Level Simulation Protocol (ALSP); Data Standards; Advanced Connectivity; M&S Resource Repository (MSRR); model Verification, Validation, and Accreditation (VV&A); and High Level Architecture (HLA). FY97 funding contained in PE 27601, USAF Warning and Simulation.

**(U) Acquisition Strategy**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development 0308601F Modeling and Simulation Support

(U) B. Program Change Summary (\$ in Thousands)

(U) FY 1998 President's Budget	FY 1997	FY 1998	FY 1999	Total Cost
(U) Appropriated Value	2,038	0	943	Continuing
(U) Adjustments to Appropriated Value	2,038			

(U) Adjustments to Appropriated Value

a. Cong Reductions -43

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998PB

+150

(U) Current Budget Submit/FY 1999 President's Budget 1,995 0 1093 Continuing

## (U) Change Summary Explanation:

Funding: FY99 adjustment supports increased M&S infrastructure efforts.

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)

(U) O&M (AF 3400)	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Contine	Total Cost Contine
			4,123	8,368	8,024	9,822	12,278		

(U) D. Schedule Profile See individual R-2s

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0308601F Modeling and Simulation Support

1011

COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
1011	Joint Modeling & Simulation Integration Program (JMSIP)	1,995*	0	358	378	397	404	415	TBD	Continuing
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

Numerous models currently exist and are being modified or developed for a broad range of areas including acquisition, analysis, test and evaluation, and training. JMSIP supports the upgrade of R&D funded legacy models selected through a board process. The selection process allows the board to influence the direction of legacy model development and iteration for the modeling and simulation community. Emphasis is placed on joint applicability and acceptance.

**(U) Acquisition Strategy****(U) FY 1997 (\$ in Thousands):**

- (U) \$ 707 Fund mission air functional representation in current campaign level legacy models.  
 - (U) \$ 600 Develop space functional representation for current campaign level legacy models.  
 - (U) \$ 450 Migrate selected legacy models to joint standards definition  
 - (U) \$ 238 Develop interoperability in selected campaigning, mission, and engagement legacy models.  
 - (U) \$ 1,995 Total

**(U) FY 1998 (\$ in Thousands):**

- (U) \$0 Not Applicable

**(U) FY 1999 (\$ in Thousands):**

- (U) \$ 358 Migrate selected legacy models to joint standards definitions.  
 - (U) \$ 358 Total

Project 1011

Page 3 of 10 Pages

Exhibit R-2 (PE 0308601F)

1731

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0308601F Modeling and Simulation Support

1011

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost  
ContinuingFY 1997  
2,038  
2,038  
FY 1998  
0  
FY 1999  
358  
Total Cost Continuing

(U) FY 1998 President's Budget

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

Continuing

(U) Change Summary Explanation:

Funding: FY99 adjustment supports legacy model transitions.

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)To  
Compl  
Continue  
Total  
Cost  
ContinueFY 1997  
4,455  
FY 1998  
6,104  
FY 1999  
4,110  
FY 2000  
8,451  
FY 2001  
7,958  
FY 2002  
9,912  
FY 2003  
12,297  
Total Cost Continue

(U) PE 27601F, O&amp;M (AF 3400)

(U) D. Schedule ProfileFY 1997  
2  
3

1

X

FY 1998  
2  
3

1

X

FY 1999  
2  
3

1

X

4

4

(U) Fund start of multiple projects

Project 1011

Page 4 of 10 Pages

Exhibit R-2 (PE 0308601F)

1732

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0308601F Modeling and Simulation Support

1011

(U) A. Project Cost Breakdown (\$ in Thousands)

Executive Agent for Air/Space Natural Environment

FY 1997

FY 1998

FY 1999

(U) Cost Categories

(U) a. Software Development	1,770		
(U) b. Contractor Support	150		280
(U) c. Program Management Support	50		50
(U) d. Travel	25		28
(U) Total	1,995	0	358

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Various	Various	Various			0	1,995	0	358	continuing	continuing
<u>Support and Management Organizations</u>										
None										
<u>Test and Evaluation Organizations</u>										
None										

Project 1011

Page 5 of 10 Pages

Exhibit R-3 (PE 0308601F)

1733

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE	February 1998				
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT					
7 - Operational System Development		0308601F Modeling and Simulation Support		1011					
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)									
Government Furnished Property: N/A									
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Property</u>									
None									
<u>Support and Management Property</u>									
None									
<u>Test and Evaluation Property</u>									
None									
Subtotal Product Development				0	1,995	0	358	continuing	continuing
Subtotal Support and Management									
Subtotal Test and Evaluation									
Total Project				0	1,995	0	358	continuing	continuing

Project 1011

Page 6 of 10 Pages

Exhibit R-3 (PE 0308601F)

Project 1011

Page 6 of 10 Pages

Exhibit R-3 (PE 0308601F)

1734

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0308601F Modeling and Simulation Support								4566	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4566	Executive Agent for Air/Space Natural Environment	0	0	735	710	813	849	943	TBD	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	
<p>(U) <b>A. Mission Description and Budget Item Justification</b>  Air Force Combat Climatology Center (AFCCC), Scott AFB, IL has been designated as the DoD Modeling and Simulation (M&amp;S) Executive Agent (EA) for Air and Space Natural Environment. This program provides funds for M&amp;S EA joint wargaming architecture, database, model development support for Joint Warfare Simulation (JWARS), Joint Simulation System (JSIMS), Joint Modeling and Simulation System (JMASS), and other joint M&amp;S program offices. Primary users will be unified commanders and service components for use in joint exercises involving air, ground, sea, and space campaigns.</p> <p>(U) <b>Acquisition Strategy</b></p> <p>(U) FY 1997 (\$ in Thousands):  - (U) \$0 Not Applicable</p> <p>(U) FY 1998 (\$ in Thousands):  - (U) \$0 Not Applicable</p> <p>(U) FY 1999 (\$ in Thousands):  - (U) \$ 435 Modeling &amp; simulation data for CINC/AF models  - (U) \$ 300 Production center model implementation  - (U) \$ 735 Total</p>											

Exhibit R-2 (PE 0308601F)

Page 7 of 10 Pages

1735

UNCLASSIFIED

Project 4566

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0308601F Modeling and Simulation Support

4566

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) FY 1998 President's Budget				
(U) Appropriated Value				
(U) Adjustments to Appropriated Value				
a. Cong Reductions				
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY 1999 President's Budget			+735 735	Continuing

## (U) Change Summary Explanation:

Funding: FY99 adjustment supports other M&amp;S infrastructure activities.

Schedule: Not Applicable

Technical: Not Applicable

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl Continue	Total Cost Continue
(U) PE 38601F, O&M (AF 3400)	1,288	1,377	1,481	1,502	1,557	1,640			

(U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 1999
(U) Architecture	1	2	3	4	1	2	3	4
(U) Database Capabilities				X	X	X	X	X
(U) Models				X	X	X	X	X

Project 4566

Page 8 of 10 Pages

Exhibit R-2 (PE 0308601F)

1736

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0308601F Modeling and Simulation Support

4566

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Cost Categories			
(U) a. Software Development			348
(U) b. Lab Overhead/Management			100
(U) c. Prototyping			262
(U) d. Travel			25
(U) Total	0	0	735

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program

Product Development Organizations					0	0	0	735	continuing	continuing
Various	Various									

Support and Management Organizations

None

Test and Evaluation Organizations

None

Project 4566

Page 9 of 10 Pages

Exhibit R-3 (PE 0308601F)

1737

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0308601F Modeling and Simulation Support

4566

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Government Furnished Property: N/A

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget	Budget	Budget	Total Program
					FY 1997	FY 1998	FY 1999	
<u>Product Development Property</u>								
None								
<u>Support and Management Property</u>								
None								
<u>Test and Evaluation Property</u>								
None								
Subtotal Product Development				0	0	0	735	continuing continuing
Subtotal Support and Management								
Subtotal Test and Evaluation								
Total Project				0	0	0	735	continuing continuing

Project 4566

Page 10 of 10 Pages

Exhibit R-3 (PE 0308601F)

1738

UNCLASSIFIED

PE NUMBER: 0401119F

PE TITLE: C-5 Airlift Squadrons

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0401119F C-5 Airlift Squadrons									
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		1,122	9,160	47,940	0	0	0	0	0	58,222	
4377 Airborne Broadcast Intelligence (ABI) C-5		651	0	0	0	0	0	0	0	651	
4495 Avionics Modernization Program		471	9,160	47,940	0	0	0	0	0	57,571	
Quantity of RDT&E Articles		1*\$/350	0	0	0	0	0	0	0	1*\$/350	

\* Note: One unit applies to project 4377

**(U) A. Mission Description and Budget Item Justification**

**4377: Airborne Broadcast Intelligence (ABI):** Airlift and Air Refueling Mission Area Plans identify a deficiency in ability to protect aircraft from hostilities during combat operations. The ABI system addresses this deficiency and increases aircrew survivability by providing aircrews with portable, on-aircraft mission equipment to receive and display critical real-time intelligence information. Strategic mobility aircrews often fly extended missions or transit enroute stations without full intelligence information capability. Information provided prior to mission departure is often outdated or incomplete upon arrival in theater. ABI provides increased threat situational awareness and enables aircrews to make mission modifications to avoid enemy threats under rapidly changing combat conditions. To limit system implementation costs, it is envisioned that ABI will "snap-on" to any Air Mobility Command (AMC) mobility fleet aircraft when this capability is needed. These systems are intended to be interchangeable between KC-135, KC-10, C-141, C-5, and C-17 operational wings, as required. This project was an FY97 new start to modify and integrate previously developed intelligence communication and display equipment to meet AMC requirements. This project was comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development.

**4495: Avionics Modernization Program (AMP):** (Formerly called the C-5 All-Weather Flight Control System (AWFCS) Reliability Improvement Program) The C-5 Avionics Modernization Program redesigns the avionics system architecture to support the AWFCS Reliability Improvement Program and Global Air Traffic Management (GATM). The AWFCS replaces low reliability Line Replaceable Units (LRUs) in the automatic flight control system and replaces aging mechanical instruments in the engine and flight systems. Current trends indicate some control systems will be unsupportable within five years. A GATM capability, which encompasses communications, navigation, and surveillance requirements, will be concurrently incorporated into the aircraft to progress towards "free flight" capability. Integration of Enhanced Ground Proximity Warning System (EGPWS) Nav Safety enhancements is also part of the C-5 AMP (with separate funding). This project was comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0401119F C-5 Airlift Squadrons

(U) Acquisition Strategy:

Airborne Broadcast Intelligence (ABI): ABI acquisition strategy intends to make maximum use of existing software and non-developmental hardware.

Avionics Modernization Program: Program acquisition strategy establishes a single integrating contractor to: modify and qualify individual Commercial Off-the-Shelf (COTS) line replaceable units (LRU) and software to meet C-5 performance and Global Air Traffic Management (GATM) requirements, update existing C-5 engineering and technical data, develop interface control specifications based on performance requirements, prototype the new system, and support ground and flight testing.

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	1,124	9,751	14,204	25,079
(U) Appropriated Value	1,153	9,751		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-24	-362		
b. SBIR	-5	-229		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions	-2		33,736	
(U) Adjustments to Budget Years Since FY1998 PB			47,940	
(U) Current Budget Submit/1999 President's Budget	1,122	9,160		58,222

## (U) Change Summary Explanation:

Funding: Since FY98 PB, additional funds (\$33.7M) were added in FY99 to support GATM requirements. Since FY98 PB, FY98 C-5 Avionics Modernization Program (AMP) has been reduced by \$362K for general Congressional reductions and by \$229K for SBIR.

Schedule: N/A

Technical: N/A

UNCLASSIFIED

UNCLASSIFIED

DATE February 1998

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0401119F C-5 Airlift Squadrons

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) PE# 0401119F/C-5 Squadrons									
Aircraft Procurement, AF, BA-7, C-5, ABI, BP-19	0	1,483	1,381	1,428	1,455	1,310	1,282	0	8,339
Aircraft Procurement, AF, BA-5, C-5 Mods,	0	0	0	113,488	53,737	123,324	112,365	196,971	599,885
Avionics Modernization Program, BP-11									
Aircraft Procurement, AF, BA-5, C-5 Mod,	0	0	5,335	3,890	3,900	4,825	398	0	18,348
Enhanced Ground Proximity Warning System (EGPWS), BP-11									
(U) PE# 0401218F/KC-135 Squadrons									
RDT&E, AF, BA-7	714	0	0	0	0	0	0	0	714
Aircraft Procurement, AF, BA-7, KC-135 Mods,	0	1,490	1,505	1,501	1,460	1,486	1,453	0	8,895
ABI, BP-19									
Operations & Maintenance, AF, BA-2	0	1,000	1,019	1,050	1,071	1,091	TBD	TBD	TBD
(U) PE# 0305099F/Global Air Traffic Management (GATM)									
RDT&E, AF, BA-7	3,000	0	27,056	18,155	10,695	9,776	7,806	TBD	TBD

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999
1	2 3	4 1 2 3	4 2 3 4

(U) Airborne Broadcast Intelligence  
(U) Avionics Modernization Program

See Individual Project R-2 Exhibits for Schedule Profiles

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0401119F C-5 Airlift Squadrons

PROJECT

4377

COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4377	Airborne Broadcast Intelligence (ABI) C-5	651	0	0	0	0	0	0	0	651
Quantity of RDT&E Articles		1*\$350								1*\$350

(U) A. Mission Description and Budget Item Justification

4377: Airborne Broadcast Intelligence (ABI): Airlift and Air Refueling Mission Area Plans identify a deficiency in ability to protect aircraft from hostilities during combat operations. The ABI system addresses this deficiency and increases aircrew survivability by providing aircrews with portable, on-aircraft mission equipment to receive and display critical real-time intelligence information. Strategic mobility aircrews often fly extended missions or transit enroute stations without full intelligence information capability. Information provided prior to mission departure is often outdated or incomplete upon arrival in theater. ABI provides increased threat situational awareness and enables aircrews to make mission modifications to avoid enemy threats under rapidly changing combat conditions. To limit system implementation costs, it is envisioned that ABI will "snap-on" to any AMC mobility fleet aircraft when this capability is needed. These systems are intended to be interchangeable between KC-135, KC-10, C-141, C-5, and C-17 operational wings, as required. This project was an FY97 new start to modify previously developed intelligence communication and display equipment to meet AMC requirements. This project was comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development.

## (U) FY 1997 (\$ in Thousands):

-	(U)	586	Engineering study/analysis; prototype development, modification, retrofit, and qualification/certification testing.
-	(U)	65	Mission support
-	(U)	\$651	Total

## (U) FY 1998 (\$ in Thousands):

-	(U)	\$0	Total
---	-----	-----	-------

## (U) FY 1999 (\$ in Thousands):

-	(U)	\$0	Total
---	-----	-----	-------

Project 4377

Page 4 of 13 Pages

Exhibit R-2 (PE 0401119F)

1742

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401119F C-5 Airlift Squadrons

4377

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	653	0	0	653
(U) Appropriated Value	672			

## (U) Adjustments to Appropriated Value

a. Congressional/General Reductions

-14

b. SBIR

-5

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

-2

e. Rescissions

(U) Adjustments to Budget Years Since FY1998 PB

(U) Current Budget Submit/1999 President's Budget

651

0

651

## (U) Change Summary Explanation:

Funding: N/A

Schedule: N/A

Technical: N/A

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) PE# 0401119F/C-5 Squadrons	0	1,483	1,381	1,428	1,455	1,310	1,282	0	8,339
Aircraft Procurement, AF, BA-7, C-5, ABI, BP-19									
(U) PE# 0401218F/KC-135 Squadrons	714	0	0	0	0	0	0	0	714
RDT&E, AF, BA-7, ABI									
Aircraft Procurement, AF, BA-7, KC-135, ABI, BP-19	0	1,490	1,505	1,501	1,460	1,486	1,453	0	8,895
Operations & Maintenance, AF, BA-2, ABI	0	1,000	1,019	1,050	1,071	1,091	TBD	TBD	TBD

Project 4377

Page 5 of 13 Pages

Exhibit R-2 (PE 0401119F)

1743

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

## February 1998

PE NUMBER AND TITLE

**040119F C-5 Airlift Squadrons**

4377

	FY 1997	FY 1998	FY 1999
1	2	1	2
	3	4	3
4			

X

Exhibit R-2 (PE 0401119F)

1744

**UNCLASSIFIED**

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401119F C-5 Airlift Squadrons

4377

## (U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Eng study/analysis; prototype development & testing	586	0	0
(U) Mission support	65	0	0
(U) Total	651	0	0

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

### Product Development Organizations

Lockheed Martin	C/CPAF	29 Jun 97	341	70	341	70				341
M-Douglas	C/FFP	May 97								70

### Support and Management Organizations

ESC	n/a	n/a		n/a		240				240
-----	-----	-----	--	-----	--	-----	--	--	--	-----

Test and Evaluation Organizations: Not applicable

Project 4377

Page 7 of 13 Pages

Exhibit R-3 (PE 0401119F)

1745

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT					
7 - Operational System Development		0401119F C-5 Airlift Squadrons				4377					
Government Furnished Property: None											
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program		
Subtotal Product Development					411				411		
Subtotal Support and Management					240				240		
Subtotal Test and Evaluation					0				0		
Total Project				0	651	0	0	0	651		

Project 4377

Page 8 of 13 Pages

Exhibit R-3 (PE 0401119F)

1746

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4495

## 7 - Operational System Development

0401119F C-5 Airlift Squadrons

COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4495 Avionics Modernization Program	471	9,160	47,940	0	0	0	0	0	57,571
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

## (U) A. Mission Description and Budget Item Justification

4495: Avionics Modernization Program: (Formerly called the C-5 All-Weather Flight Control System (AWFCS) Reliability Improvement Program) The C-5 Avionics Modernization Program redesigns the architecture of the avionics system to support the AWFCS Reliability Improvement Program and Global Air Traffic Management (GATM). The AWFCS replaces low reliability Line Replaceable Units (LRUs) in the automatic flight control system and replaces aging mechanical instruments in the engine and flight systems. Current trends indicate some control systems will be unsupportable within five years. A GATM capability, which encompasses communications, navigation, and surveillance requirements, will be concurrently incorporated into the aircraft to progress towards "free flight" capability. Integration of Enhanced Ground Proximity Warning System (EGPWS) Nav Safety enhancements is also part of the C-5 AMP (with separate funding). This project was comprised of low technical risk efforts supporting fielded weapons systems and, therefore, was assigned to Budget Activity 7, Operational Systems Development.

## (U) FY 1997 (\$ in Thousands):

(U) 436 Contractor Technical Support  
 (U) 35 Mission Support  
 (U) \$471 Total

## (U) FY 1998 (\$ in Thousands):

(U) 1,354 System Engineering  
 (U) 2,842 Hardware Design  
 (U) 3,518 Software Development  
 (U) 147 Design Data  
 (U) 528 Program Management  
 (U) 538 Contractor Technical Support  
 (U) 233 Mission Support  
 (U) \$9,160 Total

Project 4495

Page 9 of 13 Pages

Exhibit R-2 (PE 0401119F)

1747

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
4495

## 7 - Operational System Development

0401119F C-5 Airlift Squadrons

(U) FY 1999 (\$ in Thousands):

- (U) 6,329 System Engineering  
 - (U) 2,936 Hardware Design  
 - (U) 15,589 Software Development  
 - (U) 2,279 Design Data  
 - (U) 2,689 Program Management  
 - (U) 5,600 Prototype Fab/Install  
 - (U) 8,415 System Design Test and Evaluation  
 - (U) 3,209 Pre-Production Fab  
 - (U) 550 Contractor Technical Support  
 - (U) 344 Mission Support  
 - (U) \$47,940 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	471	9,751	14,204	24,426
(U) Appropriated Value	481	9,751		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-10	-362		
b. SBIR		-229		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY1998 PB			33,736	
(U) Current Budget Submit/1999 President's Budget	471	9,160	47,940	57,571

## (U) Change Summary Explanation:

Funding: Since FY98 PB, additional funds (\$33.7M) were added in FY99 to support Global Air Traffic Management (GATM) requirements. Since FY98 PB, FY98 C-5 AMP has been reduced by \$362K for general Congressional reductions and by \$229K for SBIR.

Schedule: N/A

Technical: N/A

Project 4495

Page 10 of 13 Pages

Exhibit R-2 (PE 0401119F)

1748

UNCLASSIFIED

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401119F C-5 Airlift Squadrons

4495

## (U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) PE# 0401119F/C-5 Squadrons									
Aircraft Procurement, AF, BA-5, C-5 Mods,	0	0	0	113,488	53,737	123,324	112,365	196,971	599,885
Avionics Modernization Program, BP-11									
Aircraft Procurement, AF, BA-5, C-5 Mod,	0	0	5,335	3,890	3,900	4,825	398	0	18,348
Enhanced Ground Proximity Warning System (EGPWS), BP-11									

## (U) PE# 0305099F/Global Air Traffic

Management (GATM)

RDT&amp;E, AF, BA-7

TBD

TBD

7,806

9,776

10,695

18,155

27,056

0

3,000

## (U) D. Schedule Profile

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Acquisition Strategy Panel	1	2	3	4	1	2	3	4	
(U) Draft RFP									
(U) Final RFP									
(U) Prototype Installation Start									
(U) Developmental Test Start (FY00/2)									
(U) Production Installation Start (FY01/2)									
(U) Prod Installation Complete (FY05/2)									

Project 4495

Page 11 of 13 Pages

Exhibit R-2 (PE 0401119F)

1749

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0401119F C-5 Airlift Squadrons

PROJECT

4495

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Engineering	0	1,354	6,329
(U) Hardware Design	0	2,842	2,936
(U) Software Development	0	3,518	15,589
(U) Design Data	0	147	2,279
(U) Prototype Fab/Install	0	0	5,600
(U) Program Management	0	528	2,689
(U) System Design Test and Evaluation	0	0	8,415
(U) Pre-Production Fab	0	0	3,209
(U) Contractor Technical Support	436	538	550
(U) Mission Support	35	233	344
(U) Total	471	9,160	47,940

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

Product Development Organizations

SA-ALC/LA	C/CPAF	Sep 98	TBD	59,126	0	471	9,160	47,940	0	57,571
-----------	--------	--------	-----	--------	---	-----	-------	--------	---	--------

Support and Management Organizations: Not applicableTest and Evaluation Organizations: Not applicable

Project 4495

Page 12 of 13 Pages

Exhibit R-3 (PE 0401119F)

1750

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401119F C-5 Airlift Squadrons

4495

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Government Furnished Property: None

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Subtotal Product Development				471	9,160	47,940	0	57,571	
Subtotal Support and Management				0	0	0	0	0	
Subtotal Test and Evaluation				0	0	0	0	0	
Total Project				0	471	9,160	47,940	57,571	

Project 4495

Page 13 of 13 Pages

Exhibit R-3 (PE 0401119F)

1751

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0401130F  
PE TITLE: C-17 Aircraft

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE		February 1998			
BUDGET ACTIVITY										PROJECT					
7 - Operational System Development										2569					
PE NUMBER AND TITLE										0401130F C-17 Aircraft					
COST (\$ In Thousands)															

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401130F C-17 Aircraft

2569

The Congressionally-mandated Mobility Requirements Study (MRS), initially forwarded to Congress on 23 Jan 92 and updated on 28 Mar 95, validated the need for the C-17 aircraft. Two C-17 Defense Acquisition Board (DAB) decisions, contained in the 3 Nov 95 and 1 Feb 96 USD(A&T) Acquisition Decision Memoranda (ADMs), directed the Air Force to proceed with a 120-aircraft production program and pursue a multi-year procurement for the last 80 aircraft. The FY96 Supplemental Appropriations Act and FY97 Defense Appropriations Act approved a 7-year MYP program. The Air Force is proceeding with an 80-aircraft MYP program (along with engines to support them) to complete a 120-aircraft total purchase at the maximum affordable rate (FY97-03 Quantity: 8-9-13-15-15-5), beginning with the economic order quantity (EOQ) funding in FY96.

## (U) FY 1997 (\$ in Thousands):

(U)	67,665	Continued product improvement development & testing
(U)	2,200	Airframe durability test
(U)	1,500	Producibility Enhancement/Performance Improvement (PE/PI) Government flight test
(U)	\$71,365	Total

## (U) FY 1998 (\$ in Thousands):

(U)	88,068	Continue product improvement development & testing
(U)	5,000	Airframe durability test teardown
(U)	11,500	PE/PI Government flight test
(U)	\$104,568	Total

## (U) FY 1999 (\$ in Thousands):

(U)	105,669	Continue product improvement development & testing
(U)	5,900	Landing Gear durability test and Landing Gear and Aircraft Durability Improvements
(U)	11,500	PE/PI Government flight test
(U)	\$123,069	Total

Project 2569

Page 2 of 6 Pages

Exhibit R-2 (PE 0401130F)

1754

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401130F C-17 Aircraft

2569

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	71,774	113,605	202,344	6,627,754
(U) Appropriated Value	77,486	110,605		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-1,632	-3,742		
b. SBIR	-81	-2,295		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-4,289			
e. Rescissions	-119		-79,275	
(U) Adjustments to Budget Years Since FY 1998 PB	71,365	104,568	123,069	6,614,894
(U) Current Budget Submit/1999 President's Budget				

## (U) Change Summary Explanation:

Funding: The FY98 funding changes reflect Congressional action decreasing the budget by \$3 million, and undistributed Congressional reductions. The FY99 budget changes reflect reductions to fund other DOD priorities for global mobility.

Schedule: Planned product improvement development and testing was rephased to reflect funding profile changes.

Technical: No changes.

Project 2569

Page 3 of 6 Pages

Exhibit R-2 (PE 0401130F)

1755

UNCLASSIFIED



## UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401130F C-17 Aircraft

2569

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Contractor Furnished Engineering & Test	69,765	93,068	111,569
(U) Test, Other Government Costs (OGC)	1,600	11,500	11,500
(U) Total	71,365	104,568	123,069

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Douglas Aircraft	C,FPI/FP	8/31/81	5,190,366	5,190,366	5,190,366	0	0	0	0	5,190,366
Douglas Aircraft	C,CPFF	7/13/95	874,253	874,253	81,868	64,765	88,268	111,569	528,492	874,962
Pratt & Whitney	C,FP	5/24/91	25,346	25,346	25,346	0	0	0	0	25,346
Douglas Aircraft	C,FPI	4/14/89	na	na	83,885	0	0	0	0	83,885
Pratt & Whitney	FP+EPA	4/18/95	8,300	8,300	0	5,000	3,300	0	0	8,300

Project 2569

Page 5 of 6 Pages

Exhibit R-3 (PE 0401130F)

1757

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401130F C-17 Aircraft

2569

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Support and Management Organizations</u>										
Mission Support OGC	PO				97,000	100	100	0	0	97,200
Site Activation OGC	PO				1,500	0	0	0	0	1,500
Miscellaneous	PO				43,435	0	900	0	0	44,335
<u>Test and Evaluation Organizations</u>										
Combined Test Force	PO	Dec 97			196,718	1,500	11,500	11,500	54,000	275,218
Wright Labs/Arnold	PO				10,252	0	0	0	0	10,252
Eng Dev Center										
Other	PO				3,030	0	500	0	0	3,530
<u>Government Furnished Property: None</u>										
<u>Subtotal Product Development</u>										
Subtotal Support and Management					5,381,465	69,765	91,568	111,569	528,492	6,182,859
Subtotal Test and Evaluation					141,935	100	1,000	0	0	143,035
					210,000	1,500	12,000	11,500	54,000	289,000
Total Project					5,733,400	71,365	104,568	123,069	582,492	6,614,894

Project 2569

Page 6 of 6 Pages

Exhibit R-3 (PE 0401130F)

Project 2569

Page 6 of 6 Pages

Exhibit R-3 (PE 0401130F)

1758

UNCLASSIFIED

PE NUMBER: 0401214F

PE TITLE: Air Cargo Materiel Handling (463-L)

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

**7 - Operational System Development****0401214F Air Cargo Materiel Handling (463-L)**

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	3,100	5,610	512	511	0	0	0	0	50,633
5120 60K Pound Capacity Aircraft Loader	2,202	0	0	0	0	0	0	0	43,102
5150 Next Generation Small Loader (NGSL)	898	5,610	512	511	0	0	0	0	7,531
Quantity of RDT&E Articles	0	4/\$2,800*	0	0	0	0	0	0	4/\$2,800*

\* A total of six NGSL loaders will be procured. Two additional loaders and support procured under OSD Foreign Comparative Test (FCT) Program (\$1,840).

**(U) A. Mission Description and Budget Item Justification**

This program element contains two projects integral to the Air Force's ability to mobilize forces and equipment worldwide. The two projects involve testing, developing, and fielding two new aircraft cargo loaders. These new loaders will alleviate critical loader deficiencies and provide the Air Force with a flexible balance of large and small loader capability for the future. The 60K Tunner loader replaces the 40K loader as the strategic aerial port workhorse servicing all military cargo and Civil Reserve Air Fleet (CRAF) aircraft. The NGSL replaces aging 25K loaders and complements the 60K loader fleet by providing increased deployability and cargo handling capacity at smaller, but operationally vital peacetime and contingency airfields. More importantly, the 60K loader and NGSL have a high reach capability required for direct interface with Wide-Body Aircraft (WBA). This improved capability eliminates the current requirement for a fleet of wide-body elevator loader (WBEL) equipment used in conjunction with both the 40K and 25K loaders to service WBA. Starting in FY97, the Air Force realigned the 60K RDT&E funding from PE 0604704F, Common Support Equipment Development, into this dedicated program element, which also contains the 60K procurement funding. The RDT&E and procurement funding for the NGSL has also been aligned to this program element. Acquisition of the NGSL to support operational mobility aircraft requires no significant development effort; therefore, it is categorized as BA-7, operational system development.

**(U) Acquisition Strategy:**

5120: 60K Pound Capacity Aircraft Loader: The 60K loader program incorporated an approach whereby two manufacturers built two prototypes each to compete in a "drive-off" competition. This competition resulted in a production contract award to a single manufacturer. Development effort completed in FY97.

5150: NGSL: Two Non-Developmental Item (NDI) loader manufacturers will be selected during full and open competition to build three loaders each. Loaders will compete in a "drive-off" competition and the winner will be awarded a follow-on production contract.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)				52,514*
(U) Appropriated Value	3,145	7,947	522	
(U) Adjustments to Appropriated Value	3,212	5,947		
a. Congressional/General Reductions		-225		
b. SBIR	-67	-112		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-40			
e. Rescissions	-5			
(U) Adjustments to Budget Years Since FY1998 PB			-10	
(U) Current Budget Submit/1999 President's Budget	3,100	5,610	512	50,633

\* Note: Total cost was inadvertently reported in FY98 PB as \$12,138.

## (U) Change Summary Explanation:

Funding: FY98 reflects \$225K in Congressional reductions and \$112K for SBIR. FY97 was reduced \$40K for a below threshold reprogramming (BTR) to Next Generation Heater Program (PE 0708026F).

Schedule: N/A

Technical: N/A

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) Other Procurement, AF, BA-2, Air Cargo	0	81,615	91,720	102,148	79,135	63,796	86,794	TBD	TBD
Materiel Handling, PE0401214F									

(U) D. Schedule Profile:

See individual project R-2 Exhibits for schedule profiles

Page 2 of 12 Pages

Exhibit R-2 (PE 0401214F)

1760

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

5120

COST (\$ In Thousands)

5120 60K Pound Capacity Aircraft Loader

FY 1997  
Actual

2,202

FY 1998  
Estimate

0

FY 1999  
Estimate

0

FY 2000  
Estimate

0

FY 2001  
Estimate

0

FY 2002  
Estimate

0

FY 2003  
Estimate

0

Cost to  
Complete

0

Total Cost

43,102

Quantity of RDT&amp;E Articles

0

0

0

0

0

0

0

0

0

(U) A. Mission Description and Budget Item Justification

5120: 60K Pound Capacity Aircraft Loader: This project completed the 60K aircraft transporter/loader development to fulfill Air Mobility Command's (AMC) requirement, as documented in Operational Requirement Document (ORD) 002-89-III. The project provided a single unique loader to replace existing 40K loaders, wide-body elevator loaders, and lower lobe loaders to on/off load various type aircraft including the C-17, C-5, C-141, C-130, C-27, KC-10, and Civil Reserve Air Fleet (CRAF). The 60K loader can be driven on/off the C-17, C-5, and C-141 aircraft without shoring and is the only loading vehicle capable of moving type V airdrop platform carrying a full 60,000 pounds as required by the US Army. The 60K loader is significantly more reliable than the 40K loader and will facilitate a major reduction in deployment preparation time, from 30 manhours to 3 manhours for each loader.

(U) FY 1997 (\$ in Thousands):

- (U) 414 Program Office Support (TDY, Supplies)  
- (U) 1,788 Continued contracted advisory and assistance services  
- (U) \$2,202 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$0 Total

(U) FY 1999 (\$ in Thousands):

- (U) \$0 Total

Project 5120

Page 3 of 12 Pages

Exhibit R-2 (PE 0401214F)

1761

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0401214F Air Cargo Materiel Handling (463-L)	5120	
(U) B. Program Change Summary (\$ in Thousands)			
(U) Previous President's Budget (FY1998 PB)	FY 1997	FY 1998	FY 1999
(U) Appropriated Value	579	0	0
(U) Adjustments to Appropriated Value	592		
a. Congressional/General Reductions	-13		
b. SBIR			
c. Omnibus or Other Above Threshold Reprogram			
d. Below Threshold Reprogramming	1,623		
e. Rescissions			
(U) Adjustments to Budget Years Since FY1998 PB			
(U) Current Budget Submit/1999 President's Budget	2,202	0	0
* Note: Total cost was inadvertently reported in FY98 PB as \$579.			43,102
(U) Change Summary Explanation:			
Funding: FY97 \$1,623K realigned from NGSL program (Project 5150) for contract advisory and assistance services in support of program restructure and \$13K for Congressional reductions.			
Schedule: N/A			
Technical: N/A			
(U) C. Other Program Funding Summary (\$ in Thousands)			
	FY 1997	FY 1998	FY 1999
(U) Other Procurement, AF, BA-2, Air Cargo Materiel Handling, PE0401214F	0	81,615	91,720
			82,358
			35,633
			4,367
			2,925
			TBD
			TBD
Project 5120			
Page 4 of 12 Pages			
Exhibit R-2 (PE 0401214F)			

1762

UNCLASSIFIED

**RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE \_\_\_\_\_

## February 1998

## BUDGET ACTIVITY

**PE NUMBER AND TITLE**

## 7 - Operational System Development

**0401214F Air Cargo Materiel Handling (463-L)**

## PROJECT

5120

**(U) D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
1	2	2	2
	3	3	3
		1	1
	4	4	4
4			

(U) Complete IOT&E

(U) Milestone III

(U) IOC

FY 1999

FY 1998

FY 1997

4

23

1

4

2 3

1

4

---

23

1

X

X

Project 5120

Page 5 of 12 Pages

Exhibit R-2 (PE 0401214F)

1763

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

5120

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Program Management Support	414		
(U) Advisory and assistance services	1,788		
(U) Total	2,202	0	0

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	-----------------------	------------------

Product Development Organizations

WR-ALC/LEA

40,900	0	0	0	0	40,900
--------	---	---	---	---	--------

Support and Management Organizations:

Modern Technologies Corp (MTC)	SS/Indefinite Delivery Indefinite Quantity	12 Jun 97
--------------------------------------	-----------------------------------------------------	-----------

0	1,637	0	0	0	1,637
---	-------	---	---	---	-------

WR-ALC/LEA

0	565	0	0	0	565
---	-----	---	---	---	-----

Test and Evaluation Organizations: Not applicableGovernment Furnished Property: None

Project 5120

Page 6 of 12 Pages

Exhibit R-3 (PE 0401214F)

1764

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

5120

(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget	Budget	Budget	Budget	Total Program
					FY 1997	FY 1998	FY 1999	Complete	
Subtotal Product Development				40,900	0	0	0	0	40,900
Subtotal Support and Management				0	2,202	0	0	0	2,202
Subtotal Test and Evaluation				0	0	0	0	0	0
Total Project				40,900	2,202	0	0	0	43,102

Project 5120

Page 7 of 12 Pages

Exhibit R-3 (PE 0401214F)

1765

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

5150

COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
5150	Next Generation Small Loader (NGSL)	898	5,610	512	511	0	0	0	0	7,531
Quantity of RDT&E Articles		0	4/\$2,800*	0	0	0	0	0	0	4/\$2,800*

\* A total of six NGSL loaders will be procured. Two additional loaders and support procured under OSD Foreign Comparative Test (FCT) Program (\$1,840).

(U) A. Mission Description and Budget Item Justification

5150: Next Generation Small Loader: The NGSL (25K to 35K pound capacity) program supports acquisition and delivery of 264 loaders that, with the 60K loader, will form the backbone of the Global Reach airlift 463-L (pallet) movement system. Upgrading the current loader fleet with the NGSL will correct the critical high-reach shortcomings of existing 25K loaders and will provide increased flexibility to ensure the Air Force meets its global mobility commitments.

Currently, the Air Force uses a 30-year old 25K loader with an extremely low mean time between failure (approx. 10 hours). Additionally, the 25K pound loader lacks high reach capability and requires a separate wide body elevator loader (a fixed high lift transfer platform) to off/on load KC-10 and Civil Reserve Air Fleet (CRAF) Wide-Body Aircraft (WBA). The NGSL will replace the aging 25K pound loader and wide-body elevator loaders, providing the Department of Defense with a single, reliable cargo handling system that can reach the deck heights of the KC-10 and CRAF WBA and can lower to the C-130 deck height. Additionally, the smaller NGSL will be air transportable on the C-130, allowing worldwide deployment to contingency airfields.

The NGSL program will select two Non-Developmental Item (NDI) loader manufacturers to build three loaders each. Loaders will compete in a "drive-off" competition, and the winner will be awarded a follow-on production contract.

## (U) FY 1997 (\$ in Thousands):

(U) 598 Operational Assessment of Commercial Off-the-Shelf (COTS) Loaders  
 (U) 300 Program management support  
 (U) \$898 Total

## (U) FY 1998 (\$ in Thousands):

(U) 5,100 Acquire and test Non-Developmental Item (NDI) test articles  
 (U) 510 Program management support  
 (U) \$5,610 Total

## (U) FY 1999 (\$ in Thousands):

(U) 512 Program management support  
 (U) \$512 Total

Project 5150

Page 8 of 12 Pages

Exhibit R-2 (PE 0401214F)

1766

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

5150

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	2,566	7,947	522	11,559
(U) Appropriated Value	2,620	5,947		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-54	-225		
b. SBIR		-112		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	-1,663			
e. Rescissions	-5			
(U) Adjustments to Budget Years Since FY1998 PB			-10	
(U) Current Budget Submit/1999 President's Budget	898	5,610	512	7,531

## (U) Change Summary Explanation:

Funding: FY97 \$1,623K realigned to 60K loader (Project 5120) and \$40K below threshold reprogramming (BTR) to Next Generation Heater Program (PE 0708026F), and \$5K for rescissions. FY98 reflects \$225K in Congressional reductions and \$112K for SBIR.

Schedule: N/A

Technical: N/A

Project 5150

Page 9 of 12 Pages

Exhibit R-2 (PE 0401214F)

1767

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0401214F Air Cargo Materiel Handling (463-L)								5150	
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>											
		FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost	
(U) Other Procurement, AF, BA-2, Air Cargo Materiel Handling, PE0401214F		0	0	0	19,790	43,502	59,429	83,869	0	206,590	
(U) D. <u>Schedule Profile</u>											
		FY 1997			FY 1998		FY 1999				
1		2	3	4	1	2	3	4			
		*									
(U) Quick Look Assessment (completion)											
(U) Test article contract award						X					
(U) Competitive drive-off (start)											X

Project 5150

Page 10 of 12 Pages

Exhibit R-2 (PE 0401214F)

1768

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401214F Air Cargo Materiel Handling (463-L)

5150

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Operational Assessment of COTS Loaders	598	0	0
(U) Acquire and test Non-Developmental Item (NDI) test articles	0	5,100	0
(U) Provide program management support	300	510	512
(U) Total	898	5,610	512

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations:										
WR-ALC/LEA	FFP/PR	FY98/2			0	598	5,610	512	511	7,231
Support and Management Organizations:										
Technical Support Contract					0	300	0	0	0	300

Test and Evaluation Organizations: Not applicableGovernment Furnished Property: None

Project 5150

Page 11 of 12 Pages

Exhibit R-3 (PE 0401214F)

1769

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE		February 1998	
BUDGET ACTIVITY		PE NUMBER AND TITLE		PROJECT		5150	
7 - Operational System Development		0401214F Air Cargo Materiel Handling (463-L)					
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>							
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999
							Budget to Complete
							Total Program
Subtotal Product Development				0	598	5,610	511
Subtotal Support and Management				0	300	0	0
Subtotal Test and Evaluation				0	0	0	0
Total Project				0	898	5,610	511
							7,531

Project 5150

Page 12 of 12 Pages

Exhibit R-3 (PE 0401214F)

1770

UNCLASSIFIED

PE NUMBER: 0401218F

PE TITLE: KC-135 Squadrons

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0401218F KC-135 Squadrons

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	714	1,863	11,093	2,310	501	498	505	Continuing	Continuing
4286 Multipoint*	0	0	9,423	0	0	0	0	0	9,423
4403 Airborne Broadcast Intelligence (ABI) KC-135	714	0	0	0	0	0	0	0	714
4494 KC-135 Aging Aircraft Program	0	1,863	1,670	2,310	501	498	505	Continuing	Continuing
Quantity of RDT&E Articles	2/\$500	0	1/\$5,000	0	0	0	0	0	3/\$5,500

\* The only funds budgeted for this project in FY99 are for CINC Support Aircraft Study.

(U) A. Mission Description and Budget Item Justification

4286: CINC Support Aircraft Study: Air Mobility Command (AMC) is the lead command for Commander-in-Chief (CINC) Support aircraft issues. The existing CINC Support aircraft fleet suffers from high airframe hours, corrosion, and outdated navigation and communication systems. Support costs continue to escalate because each aircraft is unique and increasingly unsupportable. The acquisition strategy is to develop and prototype the communications architecture necessary to support the warfighting CINC's on a KC-135R. The architecture must meet DoDD 4660.3 and MCM 131-46 requirements and includes: JCS communications baseline suite, an integrated Communications Management System (CMS), and a state-of-the-art, high-throughput communications backbone which provides for "plug-and-play" capability for specialized pieces of communications equipment. This aircraft will be used to determine the production configuration of subsequent CINC support aircraft. Contract will be competitively awarded. The project comprises low technical risk efforts supporting fielded weapon systems or Commercial-Off-The-Shelf (COTS) acquisition and, therefore, is assigned to Budget Activity 7, Operational Systems Development. A permanent BPAC will be assigned at a later date.

4403: Airborne Broadcast Intelligence (ABI): The Air Mobility Command (AMC) Airlift and Air Refueling Mission Area Plans identify a deficiency in the ability to protect aircraft from hostilities during combat operations. ABI addresses this deficiency and increases air crew survivability by providing aircrews with portable, on-aircraft mission equipment to receive and display critical, real-time intelligence information. Strategic mobility aircrews often fly extended missions or transit enroute stations without full intelligence information capability. Information provided prior to mission departure is often outdated or incomplete upon arrival in theater. ABI provides increased threat situational awareness and enables aircrews to make mission modifications to avoid enemy threats under rapidly changing combat conditions. To limit system implementation costs, it is envisioned that ABI will be "snapped-on" to any AMC mobility fleet aircraft when this capability is needed. These systems are intended to be transferred between KC-135, KC-10, C-141, C-5, and C-17 operational wings, as required. This project is an FY97 new start to modify and integrate on the KC-135 previously developed intelligence communication and display equipment to meet AMC requirements. Two RDT&E test articles will be procured in FY97, with delivery in FY98. This project comprises low technical risk efforts supporting fielded weapons systems and, therefore, is assigned to Budget Activity 7, Operational Systems Development.

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
BUDGET ACTIVITY	February 1998	
PE NUMBER AND TITLE		
7 - Operational System Development		
4494: KC-135 Aging Aircraft Program: This program, in part, supports the aging aircraft corrosion and fatigue project CORAL REACH. CORAL REACH studies include the analysis and testing efforts in the area of aging aircraft, to include corrosion, fatigue, and stress corrosion cracking. The USAF will utilize CORAL REACH activities to improve KC-135 Programmed Depot Maintenance efficiency and to provide direction for future aging aircraft efforts to maintain the KC-135 as a viable airframe. CORAL REACH results provide accurate data for incorporation into the KC-135 Economic Life Study planned for FY00. The KC-135 Economic Life Study consists of studies for structure, systems, and component support as well as cost benefit analyses to support an Analysis of Alternatives (AOA). The AOA addresses replacement schedules for the KC-135 based on economic decision points. This effort is a low technical risk effort supporting a fielded weapon system and, therefore, is assigned to Budget Activity 7, Operational Systems Development.		
(U) <u>Acquisition Strategy:</u>		
4286: <u>CINC Support Aircraft Study:</u> The acquisition strategy is to develop and prototype the communications architecture necessary to support the Warfighting CINC on a KC-135R. This aircraft will be used to determine the production configuration of subsequent CINC support aircraft.		
4403: <u>Airborne Broadcast Intelligence (ABI):</u> The acquisition strategy for ABI was to re-utilize software and non-developmental hardware already prototyped in a competitive, fixed-price, contract award environment.		
4494: <u>KC-135 Aging Aircraft Program:</u> The acquisition strategy consists primarily of separate task orders (with separate statements of work) ranging from fixed price to cost plus contracts. These task orders address a myriad of aging aircraft activities against existing contract vehicles, such as the SPO-managed KC-135 Fleet Support Contract and Design Engineering Program contracts managed through the Air Logistics Centers.		

UNCLASSIFIED

UNCLASSIFIED

DATE February 1998

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0401218F KC-135 Squadrons

## (U) B. Program Change Summary (\$ in Thousands)

Total  
Cost  
cont

	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget (FY1998 PB)	715	1,992	1,704
(U) Appropriated Value	757	1,992	

## (U) Adjustments to Appropriated Value

## a. Congressional/General Reductions

-23	-90
-19	-39

## b. SBIR

## c. Omnibus or Other Above Threshold Reprogram

## d. Below Threshold Reprogramming

## e. Rescissions

-1

## (U) Adjustments to Budget Years Since FY 1998 PB

## (U) Current Budget Submit/1999 President's Budget

714	1,863	9,389	11,093
-----	-------	-------	--------

cont  
cont

## (U) Change Summary Explanation:

Funding: In FY98, KC-135 Aging Aircraft Program funds were integrated with the former KC-135 Economic Life Study BPAC that had \$959K in FY00. Since FY98 PB, FY98 Aging Aircraft program has been reduced by \$90K for general Congressional reductions and by \$39K for SBIR.

Schedule: N/A

Technical: N/A

UNCLASSIFIED



## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

## February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

## 0401218F KC-135 Squadrons

(U) C. Other Program Funding Summary (\$ in Thousands)

[illegible]

(U) PE# 0401119F/C-5 Squadrons

(U) RDT&E, AF, BA-7

## Operational Systems Development, ABI

(U) Aircraft Procurement, AF, BA-7

### Other Production Charges, ABI, BP-19

**(U) D. Schedule Profile**

	FY 1997	FY 1998	FY 1999
1	2	4	1
	3	3	3
			4
		2	2
			4

(U) CINC Support Aircraft

(U) Airborne Broadcast Intelligence

(ABI)

(U) KC-135 Aging Aircraft Program

**See Individual R-2 Exhibits for Schedule Profiles**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0401218F KC-135 Squadrons

PROJECT

4286

	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4286 Multipoint*		0	0	9,423	0	0	0	0	0	9,423
Quantity of RDT&E Articles		0	0	1/\$5,000	0	0	0	0	0	1/\$5,000

\* The only funds budgeted for this project in FY99 are for CINC Support Aircraft Study.

(U) A. Mission Description and Budget Item Justification

Air Mobility Command (AMC) is the lead command for Commander-in-Chief (CINC) Support aircraft issues. The existing CINC Support aircraft fleet suffers from high airframe hours, corrosion, and outdated navigation and communication systems. Support costs continue to escalate because each aircraft is unique and increasingly unsupportable. The acquisition strategy is to develop and prototype the communications architecture necessary to support the warfighting CINCs on a KC-135R. The architecture must meet DoDD 4660.3 and MCM 131-46 requirements and includes: JCS communications baseline suite, an integrated Communications Management System (CMS), and a state-of-the-art, high-throughput communications backbone which provides for "plug-and-play" capability for specialized pieces of communications equipment. This aircraft will be used to determine the production configuration of subsequent CINC support aircraft. Contract will be competitively awarded. The project comprises low technical risk efforts supporting fielded weapon systems or Commercial-Off-The-Shelf (COTS) acquisition and, therefore, is assigned to Budget Activity 7, Operational Systems Development.

(U) FY 1997 (\$ in Thousands):  
 - (U) \$0 Total

(U) FY 1998 (\$ in Thousands):  
 - (U) \$0 Total

(U) FY 1999 (\$ in Thousands):  
 - (U) \$7,000 Communications equipment- INMARSAT, Console, Switch, STU III, UHF, VHF, Mil SATCOM, Data Communications  
 - (U) \$800 Installation  
 - (U) \$1,300 Testing  
 - (U) \$323 Program Management  
 - (U) \$9,423 Total

Project 4286

Page 5 of 18 Pages

Exhibit R-2 (PE 0401218F)

1775

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401218F KC-135 Squadrons

4286

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Communications equipment			7,000
(U) Installation			800
(U) Testing			1,300
(U) Program Management, Engineering Change Orders			323
(U) Total			9,423

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
ASC	TBD	TBD	TBD	TBD	0	0	0	7,800	0	7,800
<u>Support and Management Organizations</u>										
TBD								323		323
<u>Test and Evaluation Organizations</u>										
TBD								1,300		1,300

Project 4286

Page 7 of 18 Pages

Exhibit R-3 (PE 0401218F)

1777

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE			PROJECT	
7 - Operational System Development		0401218F KC-135 Squadrons			4286	
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)						
Government Furnished Property: TBD						
Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999
						Budget FY 2000
						Budget to Complete
						Total Program
Subtotal Product Development						7,800
Subtotal Support and Management						323
Subtotal Test and Evaluation						1,300
Total Project						9,423
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0
						0

Project 4286

Page 8 of 18 Pages

Exhibit R-3 (PE 0401218F)

1778

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0401218F KC-135 Squadrons								4403	
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4403	Airborne Broadcast Intelligence (ABI) KC-135	714	0	0	0	0	0	0	0	714	
Quantity of RDT&E Articles		2/\$500	0	0	0	0	0	0	0	2/\$500	

(U) **A. Mission Description and Budget Item Justification**  
 The Air Mobility Command (AMC) Airlift and Air Refueling Mission Area Plans identify a deficiency in the ability to protect aircraft from hostilities during combat operations. The Airborne Broadcast Intelligence (ABI) system addresses this deficiency and increases aircrew survivability by providing aircrews with portable, on-aircraft mission equipment to receive and display critical, real-time intelligence information. Strategic mobility aircrews often fly extended missions or transit enroute stations without full intelligence information capability. Information provided prior to mission departure is often outdated or incomplete upon arrival in theater. ABI provides increased threat situational awareness and enables aircrews to make mission modifications to avoid enemy threats under rapidly changing combat conditions. To limit system implementation costs, ABI will "snap-on" to any AMC mobility fleet aircraft when this capability is needed. These systems are intended to be transformed between KC-135, KC-10, C-141, C-5, and C-17 operational wings, as required. This project is an FY97 new start to modify and integrate on the KC-135 previously developed intelligence communication and display equipment to meet AMC requirements. USAF will procure two RDT&E test articles in FY97, with delivery in FY98. This project comprises low technical risk efforts supporting fielded weapons systems and, therefore, is assigned to Budget Activity 7, Operational Systems Development.

(U) FY 1997 (\$ in Thousands):  
 - (U) 200 Engineering study/analysis; prototype development, modification, retrofit, and qualification/certification testing  
 - (U) 502 Software development  
 - (U) 12 Mission support  
 - (U) \$714 Total

(U) FY 1998 (\$ in Thousands):  
 - (U) \$0 Total

(U) FY 1999 (\$ in Thousands):  
 - (U) \$0 Total

Project 4403

Page 9 of 18 Pages

Exhibit R-2 (PE 0401218F)

1779

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0401218F KC-135 Squadrons

PROJECT

4403

(U) B. Program Change Summary (\$ in Thousands)Total  
Cost

715

FY 1997

715

FY 1998

0

FY 1999

0

(U) Previous President's Budget (FY1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional/General Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

e. Rescissions

-1

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/1999 President's Budget

714

0

0

714

(U) Change Summary Explanation:

Funding: N/A

Schedule: N/A

Technical: N/A

Project 4403

Page 10 of 18 Pages

Exhibit R-2 (PE 0401218F)

1780

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401218F KC-135 Squadrons

4403

(U) C. Other Program Funding Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) PE# 0401218F/KC-135 Squadrons									
(U) Aircraft Procurement, AF, BA-7		1,490	1,505	1,501	1,460	1,486	1,453	0	8,895
Other Production Charges, ABI, BP-19									
(U) Operations & Maintenance, AF, BA-2		1,000	1,019	1,050	1,071	1,091	TBD	TBD	TBD
Mobilization, ABI									

## (U) PE# 0401119F/C-5 Squadrons

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To Compl	Total Cost
(U) RDT&E, AF, BA-7	651								651
Operational Systems Development, ABI									
(U) Aircraft Procurement, AF, BA-7		1,483	1,381	1,428	1,455	1,310	1,282	0	8,339
Other Production Charges, ABI, BP-19									

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	1	2	1	2
(U) AOA/RDT&E Studies Complete		3		3		3
(U) Certification/Qualification Testing		*				
(U) Prototype Demo		*				
(U) Integration (Deliverables to Unit)			X	X	X	X

Project 4403

Page 11 of 18 Pages

Exhibit R-2 (PE 0401218F)

1781

UNCLASSIFIED



BUDGET ACTIVITY		PE NUMBER AND TITLE		DATE	PROJECT
RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		0401218F KC-135 Squadrons		February 1998	4403
7 - Operational System Development					
<u>(U) A. Project Cost Breakdown (\$ in Thousands)</u>					
		<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U)	Engineering study/analysis, prototype development & testing	200			
(U)	Software development	502			
(U)	Mission support	12			
(U)	Total	714	0	0	
<u>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</u>					
<u>Performing Organizations:</u>					
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997
<u>Product Development Organizations</u>					
Lockheed Martin Command & Control Systems	C/CPAF	29 June 97	702	702	702
<u>Support and Management Organizations</u>					
ESC	n/a	n/a	12	12	12
<u>Test and Evaluation Organizations: Not applicable</u>					

Project 4403
Page 12 of 18 Pages
Exhibit R-3 (PE 0401218F)

Exhibit R-3 (PE 0401218F)

**UNCLASSIFIED**

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0401218F KC-135 Squadrons								4403	
(U) B. <u>Budget Acquisition History and Planning Information Continued (\$ in Thousands)</u>											
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
Government Furnished Property: None											
Subtotal Product Development					0	702	0	0	0	702	
Subtotal Support and Management					0	12	0	0	0	12	
Subtotal Test and Evaluation					0	0	0	0	0	0	
Total Project					0	714	0	0	0	714	

Project 4403

Page 13 of 18 Pages

Exhibit R-3 (PE 0401218F)

1783

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0401218F KC-135 Squadrons

PROJECT

4494

		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4494	KC-135 Aging Aircraft Program	0	1,863	1,670	2,310	501	498	505	Continuing	Continuing
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) A. Mission Description and Budget Item Justification

This program, in part, supports the aging aircraft corrosion and fatigue project CORAL REACH. CORAL REACH studies include the analysis and testing efforts in the area of aging aircraft, to include corrosion, fatigue, and stress corrosion cracking. The USAF will utilize CORAL REACH activities to improve KC-135 Programmed Depot Maintenance efficiency and to provide direction for future aging aircraft efforts to maintain the KC-135 as a viable airframe. CORAL REACH results provide accurate data for incorporation into the KC-135 Economic Life Study planned for FY00. The KC-135 Economic Service Life Study consists of studies for structure, systems, and component support as well as cost benefit analyses to support an Analysis of Alternatives (AOA). The AOA addresses replacement schedules for the KC-135 based on economic decision points. This effort is a low technical risk effort supporting a fielded weapon system and, therefore, is assigned to Budget Activity 7, Operational Systems Development.

## (U) FY 1997 (\$ in Thousands):

- (U) \$0 Total

## (U) FY 1998 (\$ in Thousands):

- (U) 41 Corrosion/crack growth rate and fatigue determination and testing  
 - (U) 107 Basic materials test and predictive technique  
 - (U) 1,415 Functional Systems Integrity Program (FSIP)  
 - (U) 300 Mission support/contractor support  
 - (U) \$1,863 Total

## UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401218F KC-135 Squadrons

4494

(U) FY 1999 (\$ in Thousands):

-	(U)	100	Corrosion/crack growth rate and fatigue determination and testing
-	(U)	495	Functional Systems Integrity Program (FSIP)
-	(U)	966	Market survey and system cost estimates
-	(U)	109	Mission support/contractor support
-	(U)	\$1,670	Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY1998 PB)	0	1,992	1,704	continuing
(U) Appropriated Value		1,992		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions		-90		
b. SBIR		-39		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Rescissions			-34	
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/1999 President's Budget	0	1,863	1,670	continuing

## (U) Change Summary Explanation:

Funding: In FY98, KC-135 Aging Aircraft Program funds were integrated with the former KC-135 Economic Life Study BPAC (project 4494) that had \$959K in FY00. Since FY98 PB, FY98 Aging Aircraft program has been reduced \$90K for general Congressional reductions and \$39K for SBIR. FY99 Aging Aircraft program has been reduced \$34K for inflation adjustments.

Schedule: N/A

Technical: N/A

Project 4494

Page 15 of 18 Pages

Exhibit R-2 (PE 0401218F)

1785

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0401218F KC-135 Squadrons

4494

(U) C. Other Program Funding Summary (\$ in Thousands): Not applicable(U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) Corrosion & Fatigue Testing			*						
(U) Materials Test & Predictive Tech.			*						
(U) FSIP		*							
(U) Mission Support		*							X
(U) Begin Market Survey									

Note: Activities are on-going

Project 4494

Page 16 of 18 Pages

Exhibit R-2 (PE 0401218F)

1786

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0401218F KC-135 Squadrons

4494

### (U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Corrosion/crack growth determination and testing	0	41	100
(U) Basic materials test and predictive technique		107	0
(U) Functional Systems Integrity Program (FSIP)		1,415	495
(U) Market survey and system cost estimates		0	966
(U) Mission support/contractor support		300	109
(U) Total	0	1,863	1,670

### (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

#### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
Boeing	C/KC-135	Oct 97-	TBD	TBD	400	0	1,715	704	continuing	continuing
	Fleet Support	Mar 99								
	SS/FFP									
Support and Management Organizations										
ARINC, Frontier, other support contractors	Design Engineering Program (DEP)	Oct 97- Mar 99			0	0	148	966	continuing	continuing
	C/FP									

Project 4494

Page 17 of 18 Pages

Exhibit R-3 (PE 0401218F)

1787

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										4494	
Contractor or										PE NUMBER AND TITLE	
Government Performing Activity										0401218F KC-135 Squadrons	
Contract	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
(U) B. Budget Acquisition History and Planning Information Continued (\$ in Thousands)											
Test and Evaluation Organizations											
FAA, Wright Labs, etc.	Project Order/MPIR	Oct 97- Mar 99				100	0	0	0	continuing	continuing
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
						400	0	1,715	704	continuing	continuing
						0	0	148	966	continuing	continuing
						100	0	0	0	continuing	continuing
						500	0	1,863	1,670	continuing	continuing

Project 4494

Page 18 of 18 Pages

Exhibit R-3 (PE 0401218F)

1788

UNCLASSIFIED

PE NUMBER: 0702207F

UNCLASSIFIED

PE TITLE: Depot Maintenance (Non-If)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY										PROJECT	
7 - Operational System Development										3326	
PE NUMBER AND TITLE										0702207F Depot Maintenance (Non-If)	
COST (\$ in Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
3326 Precision Measurement & Calibration	1,375	1,482	1,530	1,566	1,602	1,629	1,667	Continuing	TBD		
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

**(U) A. Mission Description and Budget Item Justification**

This program develops, tests, and evaluates national and Air Force measurement standards and calibration equipment in support of all Air Force programs and activities, including over 120 base Precision Measurement Equipment Laboratories (PMELEs) worldwide. Metrology research and development provides technology to support systems in all phases of development and acquisition, as well as Air Force R&D laboratories, test ranges, ground test facilities, and operational weapons systems support. Rapidly changing technology requires continuing research and development of measurement standards and calibration equipment to ensure modern weapon systems meet Air Force readiness objectives. This program addresses all metrology disciplines and includes the technology areas of laser, infrared, microwave, millimeter wave, optical, physical, mechanical, electrical, electronic, and ionizing radiation measurements.

Metrology is a technical discipline devoted to the science of measurements and to the study and improvement of measurement technology. Measurements are the foundation of military system development, quality assurance, hardware conformance testing and system readiness tests. The integrity of these tests is assured through calibration and traceability assurance schemes. The capability to measure and calibrate must parallel the emergence of new technologies, new ranges, and new capabilities of military systems. Lack of new measurement capability impedes or blocks the successful exploitation of new technologies, especially in the movement from development laboratory to production to deployment. R&D efforts are essential within the DoD to pace these requirements, otherwise, these same new systems will suffer time delays, excessive cost, and increased risk due to unreliable test results in all phases of development, production, deployment and operation. This program is in budget activity 7 - Operational System Development because it supports operational systems.

Project 3326

Page 1 of 6 Pages

Exhibit R-2 (PE 0702207F)

1789

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0702207F Depot Maintenance (Non-If)	3326	
<u>Acquisition Strategy:</u>			
(U) FY 1997 (\$ in Thousands):			
- (U)	\$750	Completed development of radiance and irradiance detector standards and continued development of an enhanced electrical substitution radiometer, tunable lasers for radiometry, an improved blackbody pyrometer and other national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.	
- (U)	\$410	Continued development of microwave standards for noise figure measurements, radar cross-section test range measurements, and high power standards to support radar and radio frequency (RF) communication systems.	
- (U)	\$165	Continued development of national standards for electrical resistance and high speed pulse measurements to support high accuracy electronic test equipment.	
- (U)	\$50	Continued development of national standards and National Institute of Standards and Technology (NIST) traceability for calibration of ionizing radiation hazard instrumentation.	
- (U)	\$1,375	Total	
(U) FY 1998 (\$ in Thousands):			
- (U)	\$762	Complete development of an improved blackbody calibrator for the AF Primary Standards Laboratory, an enhanced electrical substitution radiometer, a pyroelectric radiometer, and an improved blackbody pyrometer; and begin development of a portable cryogenic radiometer to support infrared test chambers. Continue development of other national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.	
- (U)	\$240	Complete high power standards and continue development of microwave standards for noise figure measurements and radar cross-section test range measurements to support radar and RF communication systems.	
- (U)	\$150	Begin development of methods to characterize micro-electromechanical sensors (MEMS) and continue development of improved methods to reduce coordinate measuring machine (CMM) measurement uncertainty.	
- (U)	\$180	Begin development of methods to determine the frequency response characterization of capacitors. Continue development of national standards for electrical resistance and development of high speed pulse measurements to support high accuracy electronic test equipment.	
- (U)	\$65	Begin large area source metrology project, and continue to develop national standards and NIST traceability for calibration of ionizing radiation hazard instrumentation.	
- (U)	\$1,397	Total	

Project 3326

Page 2 of 6 Pages

Exhibit R-2 (PE 0702207F)

1790

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE <b>February 1998</b>
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT <b>3326</b>
<b>7 - Operational System Development</b>	<b>0702207F Depot Maintenance (Non-If)</b>	

  

(U) FY 1999 (\$ in Thousands):	
- (U) \$785	Complete the development of tunable lasers for radiometry and detector standards for long wavelength infrared measurements; and continue development of other national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment.
- (U) \$280	Continue development of standards for radar support, RF communications systems, and radar cross-section range measurements.
- (U) \$150	Complete development of methods to characterize micro-electromechanical sensors (MEMS) and continue development of improved calibration support for coordinate measuring machine (CMMs).
- (U) \$220	Begin development of transportable high value resistance standards and continue development of standards for electrical measurements to support high accuracy electronic test equipment.
- (U) \$65	Complete beta measurement traceability project and continue large area source metrology project and the development of national standards for calibration of ionizing radiation hazard instrumentation.
- (U) \$1,500	Total

Project 3326

Page 3 of 6 Pages

Exhibit R-2 (PE 0702207F)

1791

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0702207F Depot Maintenance (Non-If)

3326

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost TBD
(U) Previous President's Budget FY 1998 PB	1,444	1,482	1,530	
(U) Appropriated Value	1,444	1,482		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-30	-48		
b. SBIR	-37	-37		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Recissions	-2			
(U) Adjustments to Budget Years Since FY 1998 PB			-30	
(U) Current Budget Submit/FY 1999 PB	1,375	1,397	1,500	TBD

## (U) Change Summary Explanation:

Funding: FY1999 \$30 has been re-allocated to fund higher priorities (-30).

Schedule: None

Technical: None

(U) C. Other Program Funding Summary (\$ in Thousands) (U) None(U) D. Schedule Profile (U) None

Project 3326

Page 4 of 6 Pages

Exhibit R-2 (PE 0702207F)

1792

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0702207F Depot Maintenance (Non-If)

3326

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Develop Measurement Standards & Calibration Support	1,354	1,370	1,472
(U) Travel	21	27	28
(U) Total	1,375	1,397	1,500

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
-------------------------------------------------------	--------------------------------------------------	--------------------------------	-------------------------------	--------------------------	------------------------------	-------------------	-------------------	-------------------	-----------------------	------------------

Product Development Organizations

National Institute of Standards & Technology AFMC	DD FORM 448) In House	1st QTR	TBD	TBD	10,914	1,354	1,370	1,472	Continue	TBD
		Various	TBD	TBD	98	21	27	28	Continue	TBD

Support and Management OrganizationsTest and Evaluation Organizations

Project 3326

Page 5 of 6 Pages

Exhibit R-3 (PE 0702207F)

1793

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0702207F Depot Maintenance (Non-If)

3326

Government Furnished Property: N/A

Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Subtotal Product Development				11,012	1,375	1,397	1,500	Continue	TBD
Subtotal Support and Management				0	0	0	0	0	0
Subtotal Test and Evaluation				0	0	0	0	0	0
Total Project				11,012	1,375	1,397	1,500	Continue	TBD

Project 3326

Page 6 of 6 Pages

Exhibit R-3 (PE 0702207F)

1794

UNCLASSIFIED

PE NUMBER: 0708011F

PE TITLE: Industrial Preparedness

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0708011F Industrial Preparedness

PROJECT

2865

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2865 Industrial Preparedness-Manufacturing Technology	48,615	45,020	50,997	52,758	54,498	55,162	55,850	0	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

(U) **A. Mission Description and Budget Item Justification:** The Manufacturing Technology (ManTech) program is a corporate Air Force program that establishes and demonstrates advancements in manufacturing process technologies, manufacturing engineering systems, and industrial practices, and transitions these advancements into weapon systems design, development, acquisition, and/or sustainment. ManTech provides cost reduction processes and practices and new manufacturing capabilities applicable to existing as well as new weapon systems under development. ManTech strives to make superior mission enabling technologies an affordable life cycle reality by expanding access to a capable, responsible, multi-use industrial base with efficiencies comparable to world class enterprises. Program efforts accelerate shop floor manufacturing process maturation, at every stage of development, through increased emphasis on cost, time, and quality risks in transition. Best processes are evaluated and adapted for application. Where mature processes are not available, laboratory-developed initial process capabilities are matured and inserted into weapon system programs. ManTech goes beyond just factory floor manufacturing/repair processes and encompasses every activity within an industrial enterprise, ranging from above the shop floor activities, including tools for integrated product process development (IPPD), to supplier base interactions and performance. The strategies and best practices of world-class enterprises are analyzed and the performance of defense suppliers benchmarked. The world's best industrial practices are adapted and validated in multiple pilot projects and deployed in defense applications. Project efforts address and target all industry levels, from large prime contractors to small material and parts vendors. Program efforts also enhance the organic repair/remanufacture capability to affordably sustain the aging weapon systems inventory. This program is in Budget Activity 7, Operational System Development, because it provides support to systems in production and/or operational use.

(U) **Acquisition Strategy:** All major contracts in this Program Element were awarded after full and open competition.

(U) **FY 1997 (\$ in Thousands):**

- (U) \$35,065 Established and demonstrated cost-effective and efficient manufacturing technologies for critical, high quality, reliable structural, propulsion, and electronic components and assemblies required for existing and next generation aircraft. Conducted pilot efforts in high-payoff endeavors aimed at validating potential benefits from flexible manufacturing, commercial/military integration, quality processing, and supplier improvements.
- Conducted long-term projects focused on IPPD tools.
- (U) Initiated effort to validate revolutionary concepts for manufacture of "all composite" vehicles at a cost of 50% of alternate structures.
- (U) Continued effort to reduce investment casting manufacturing costs by 50%, focusing on the gas turbine engine supplier base.
- (U) Completed effort for affordable production of multifunctional radomes for fighters, achieving a 30% manufacturing cost reduction.

Project 2865

Page 1 of 9 Pages

Exhibit R-2 (PE 0708011F)

1795

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
<b>7 - Operational System Development</b>	<b>0708011F Industrial Preparedness</b>			<b>2865</b>
- (U) \$7,280	Established and demonstrated cost-effective repair and remanufacture technologies to affordably sustain existing weapon systems and to enhance mission readiness. Reduced repair and maintenance cycle time for aging systems and established remanufacturing capabilities able to rapidly generate standardized replacement parts on demand.			
	<ul style="list-style-type: none"> <li>- (U) Completed effort to provide Air Logistics Centers (ALCs) with the tools needed to prepare spare parts procurement packages.</li> <li>- (U) Established metal forming simulation remanufacturing processes for logistics centers to generate standardized replacement structures.</li> <li>- (U) Initiated nondestructive inspection efforts (moisture detection, large area disbonds, and filmless radiography) for aging aircraft.</li> <li>- (U) Completed effort to enable the ALCs to efficiently design and develop composite secondary structure by providing an automated drafting and analysis capability.</li> </ul>			
- (U) \$3,405	Established and demonstrated efficient and cost-effective manufacturing methods for high performance, high reliability electronics, lightweight structures, and efficient propulsion methods for advanced tactical missiles. Established manufacturing improvements required to transition precision guided munitions subsystems into production. Conducted pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from inserting best practices in production of weapon systems.			
	<ul style="list-style-type: none"> <li>- (U) Completed effort to establish manufacturing processes capable of producing affordable tactical grade fiber optic gyroscopes in support of missiles.</li> <li>- (U) Initiated efforts to enable the affordable manufacture of ballistic wind sensors for use in munitions targeting and/or wind shear detection systems.</li> <li>- (U) Continued programs to implement lean benchmarking findings by demonstrating a modular factory approach to the manufacture of missile components.</li> </ul>			
- (U) \$2,865	Established and demonstrated affordable, flexible manufacturing processes to reduce the cost and lead time of higher performance spacecraft and launch vehicles. Established effective and efficient manufacturing technology for critical high quality, reliable electronic components and assemblies required for surveillance, tracking communications links, and data/signal processing. Conducted pilot efforts in high-payoff endeavors aimed at providing efficient, low-cost capability to produce components and weapon systems in the space, launch, and Command, Control, Communications, and Intelligence (C3I) industrial base sectors.			
	<ul style="list-style-type: none"> <li>- (U) Continued process refinement phase of effort to establish manufacturing processes for affordable power efficient, space-qualified multi-bandgap solar cells.</li> <li>- (U) Initiated activity defining benchmarking approach for applying lean principles to space and launch industry sector.</li> </ul>			
- (U) \$48,615	Total			

Project 2865

Page 2 of 9 Pages

Exhibit R-2 (PE 0708011F)

1796

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
7 - Operational System Development		0708011F Industrial Preparedness	2865
(U) FY 1998 (\$ in Thousands):			
- (U) \$34,120	Establish and demonstrate cost-effective and efficient manufacturing technologies for critical, high quality, reliable structural, propulsion, and electronic components and assemblies required for existing and next generation aircraft. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from flexible manufacturing, commercial military integration, quality processing, and supplier improvements. Conduct long-term projects focused on integrated product process development (IPPD) tools.		
- (U) \$6,545	<ul style="list-style-type: none"> <li>(U) Complete pilot efforts to demonstrate manufacture of military electronic components on a commercial line and to incorporate best commercial practices into defense production facilities.</li> <li>(U) Complete effort of the Design and Manufacture of Low-Cost Composite Engine parts.</li> <li>(U) Continue the Lean Aircraft Initiative to reduce non-value-added activities across the manufacturing enterprise.</li> <li>(U) Continue the Composites Affordability Initiative to manufacture composite structures affordably.</li> <li>(U) Initiate the Lean Implementation project focused on supply chain processes and practices.</li> </ul> Establish and demonstrate cost-effective repair and manufacturing technologies for affordable sustainment of existing weapon systems and to enhance mission readiness. Reduce repair and maintenance cycle time for aging systems and establish remanufacturing capabilities which will rapidly generate standardized replacement parts on demand.		
- (U) \$2,295	<ul style="list-style-type: none"> <li>(U) Complete effort to establish and demonstrate the capability to capture electronic device test requirements independent of specific test equipment, thereby, reducing the warfighter's systems life cycle burden.</li> <li>(U) Initiate efforts to establish process improvements for repair/manufacture of large area structures on aging aircraft.</li> <li>(U) Initiate efforts to mitigate the risk associated with electronic parts obsolescence.</li> <li>(U) Initiate effort to establish a laser shock peening process in order to reduce high cycle fatigue failures in engine turbine blades.</li> <li>(U) Initiate effort to respond rapidly to issues required by the aging aircraft fleet.</li> </ul> Establish and demonstrate efficient and cost-effective manufacturing methods for high performance, high reliability electronics, lightweight structures, and efficient propulsion methods for advanced tactical missiles. Establish manufacturing improvements required to transition precision guided munitions' subsystems into production. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from inserting best practices in the production of weapon systems.		
	<ul style="list-style-type: none"> <li>(U) Complete Lean Implementation effort to establish and demonstrate the ability to produce military electronic modules on a commercial line.</li> <li>(U) Continue the effort to establish an affordable manufacturing process for Light Detection and Ranging (LIDAR) wind sensors for munitions targeting, wind shear detection, and air data gathering.</li> </ul>		

Project 2865

Page 3 of 9 Pages

Exhibit R-2 (PE 0708011F)

1797

UNCLASSIFIED



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0708011F Industrial Preparedness

PROJECT

2865

- (U) \$2,060 Establish and demonstrate affordable, flexible manufacturing processes to reduce the cost and lead time of higher performance spacecraft and launch vehicles. Establish effective and efficient manufacturing technology for critical high quality, reliable electronic component and assemblies required for surveillance, tracking communication links, and data/signal processing. Conduct pilot efforts in high-payoff endeavors aimed at providing efficient, low-cost capability to produce components and weapon systems in the space, launch, and Command, Control, Communications, and Intelligence (C3I) industrial base sectors.
  - (U) Complete efforts for finding efficient and affordable methods to produce rugate coatings.
  - (U) Continue efforts to establish manufacturing processes for affordable power efficient, space-qualified multi-bandgap solar cells.
  - (U) Continue Lean Space Initiative to infuse lean principles, concepts, and practices into the defense space industry.
- (U) \$45,020 Total

## (U) FY 1999 (\$ in Thousands):

- (U) \$24,610 Establish and demonstrate cost-effective and efficient manufacturing technologies for critical, high quality, reliable structural, propulsion, and electronic components and assemblies required for existing and next generation aircraft. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from flexible manufacturing, commercial military integration, quality processing and supplier improvements. Conduct long-term projects focused on integrated product process development (IPPD) tools.
  - (U) Complete Phase II efforts on the Lean Aircraft Initiative to benchmark lean production concepts for the military aircraft industry.
  - (U) Complete the MEREOS project for a next generation data base management system for the reconciliation of Bill of Materials.
  - (U) Continue efforts to validate revolutionary approaches for manufacture of "all composite" air vehicles at costs of 50% of alternative structures.
  - (U) Continue effort to realize Rapid Response Improvement Process enhancements.
  - (U) Initiate efforts to establish an affordable Passive Infrared (IR) Coatings application process.
  - (U) Initiate effort focused on crucial lead time reduction and affordability enhancement of engine forgings.
  - (U) Initiate initiative addressing enhancement of small/medium supplier base providing components for weapon systems in acquisition stage of life cycle.
- (U) \$18,010 Establish and demonstrate cost-effective repair and manufacturing technologies for affordable sustainment of existing weapon systems and to enhance mission readiness. Reduce repair and maintenance cycle time for aging systems and establish remanufacturing capabilities able to rapidly generate standardized replacement parts on demand.
  - (U) Complete Initial Lean Sustainment effort to identify approaches to transform depot maintenance support infrastructure into a world class enterprise.
  - (U) Continue efforts to establish large area structural repair capability for aging aircraft.
  - (U) Continue efforts to mitigate risk associated with the issue of electronics parts obsolescence.
  - (U) Continue effort on Lean Implementation of turbine engine blade tip repair to cut repair costs and reduce scrap by 30%.
  - (U) Continue to productionize the laser shock peening process.
  - (U) Initiate new sustainment initiatives focused on lean implementation, aging system requirements, and life cycle cost (LCC) reduction.

Project 2865

Page 4 of 9 Pages

Exhibit R-2 (PE 0708011F)

1798

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE		February 1998
PE NUMBER AND TITLE		PROJECT
0708011F Industrial Preparedness		2865
BUDGET ACTIVITY		
7 - Operational System Development		
- (U) \$1,020	Establish and demonstrate efficient and cost-effective manufacturing methods for high performance, highly reliable electronics, lightweight structures, and efficient propulsion methods for advanced tactical missiles. Establish manufacturing improvements required to transition precision guided munitions' subsystems into production. Conduct pilot efforts in high-payoff endeavors aimed at validating potential benefits accrued from inserting best practices in production of weapon systems.	
- (U) \$7,357	<ul style="list-style-type: none"> <li>(U) Continue Light Detection and Ranging (LIDAR) efforts to establish an affordably manufactured LIDAR wind sensor for munitions targeting, wind shear detection, and air data gathering.</li> <li>Establish and demonstrate affordable, flexible manufacturing processes to reduce the cost and lead time of higher performance spacecraft and launch vehicles. Establish effective and efficient manufacturing technology for critical high quality, reliable electronic component and assemblies required for surveillance, tracking communication links, and data/signal processing. Conduct pilot efforts in high-payoff endeavors aimed at providing efficient, low-cost capability to produce components and weapon systems in the space, launch, and Command, Control, Communications, and Intelligence (C3I) industrial base sectors.</li> <li>(U) Complete effort to establish manufacturing processes for affordable power efficient, multi-bandgap solar cells.</li> <li>(U) Continue effort to infuse lean production principles into defense space, aircraft, and launch vehicle industries.</li> <li>(U) Initiate effort to rapidly respond to manufacturing issues in the industrial base.</li> <li>(U) Initiate implementation of lean concepts in space sector industrial base.</li> <li>(U) Initiate activities focused on providing affordable manufacturing processes for spacecraft electronic components and launch vehicle propulsion components.</li> </ul>	
- (U) \$50,997	Total	

Project 2865

Page 5 of 9 Pages

Exhibit R-2 (PE 0708011F)

1799

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708011F Industrial Preparedness

2865

(U) B. Program Change Summary (\$ in Thousands):

(U) Previous President's Budget (FY 1998 PB)

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Congressional/General Reductions

b. SBIR

c. Omnibus/Other Above Threshold Reprogrammings

d. Below Threshold Reprogrammings

e. Rescissions

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 1999 President's Budget

(U) Change Summary Explanation:

Funding: Changes to this PE since the previous President's Budget are due to Air Force priorities and budget constraints.

Schedule: Not Applicable.

Technical: Not Applicable.

(U) C. Other Program Funding Summary: Not Applicable.(U) D. Schedule Profile: Not Applicable.Total  
Cost  
Continuing

FY 1999

45,923

FY 1998

48,429

48,429

-2,396

-1,013

-1,194

-1,143

-1,933

-84

48,615

45,020

5,074

50,997

Continuing

Project 2865

Page 6 of 9 Pages

Exhibit R-2 (PE 0708011F)

1800

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY		PE NUMBER AND TITLE		
7 - Operational System Development		0708011F Industrial Preparedness		
(U) A. Project Cost Breakdown (\$ in Thousands):		FY 1997	FY 1998	FY 1999
(U) Manufacturing technologies for aircraft components		35,065	34,120	24,610
(U) Repair/remanufacture technologies for weapon systems sustainment		7,280	6,545	18,010
(U) Manufacturing methods for missile and munition assemblies		3,405	2,295	1,020
(U) Manufacturing processes to reduce spacecraft and launch vehicle costs		2,865	2,060	7,357
(U) Total		48,615	45,020	50,997

Exhibit R-3 (PE 0708011F)

Page 7 of 9 Pages

Project 2865

1801

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708011F Industrial Preparedness

2865

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands):

Performing Organizations

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	FY 1997	FY 1998	FY 1999	To Complete	Total Program
<u>Product Development Organizations</u>										
Numerous	Various	Various	N/A	N/A	N/A	24,945	21,182	35,262	Cont	Cont
TRW	CPFF	May 94			13,200	4,200	3,600	0	0	21,000
Howmet	Cost Share	Jul 95			2,500	2,000	5,000	4,000	8,750	22,250
Ontek	CPFF	Jan 95			3,000	1,600	1,400	1,000	0	7,000
Spectrolab	CPFF	Sep 95			250	900	1,250	660	0	3,060
General Atomics	CPFF	Aug 93			2,900	0	1,230	1,250	425	5,805
IBM	CPFF	Sep 93			2,800	1,300	170	0	0	4,270
Lockheed	Cost Share	Jun 96			500	1,188	761	0	0	2,449
McDnld Douglas	CPFF	May 94			28,100	9,800	1,811	0	0	39,711
TRW	CPFF	Sep 93			400	1,532	1,191	0	0	3,123
Boeing	CA	Dec 97			0	150	400	925	1125	2600
CAI(Consortium)	CPFF	Aug 97			0	1,000	6,500	4,500	13,500	25,500
Elec Parts Obsol	TBD	TBD			0	0	525	3,400	10,325	14,250

Support and Management Organizations - In-House Support.  
 Test and Evaluation Organizations - Not Applicable.

Project 2865

Page 8 of 9 Pages

Exhibit R-3(PE 0708011F)

1802

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE			2865
7 - Operational System Development	0708011F Industrial Preparedness			
Government Furnished Property - Not Applicable.				
Subtotal Product Development	N/A	48,615	45,020	50,997
Subtotal Support and Management	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0
Total Project	N/A	48,615	45,020	50,997

Project 2865

Page 9 of 9 Pages

Exhibit R-3(PE 0708011F)

1803

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0708026F

UNCLASSIFIED

PE TITLE: Product/Reliable/Avail/Maintain Prog

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0708026F Product/Reliable/Avail/Maintain Prog									
	COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
Total Program Element (PE) Cost		15,856	21,764	970	9,753	20,891	30,685	30,948	Continuing	Continuing	
2146 PRAM		15,856	12,306	970	9,753	20,891	30,685	30,948	Continuing	Continuing	
4761 Aging Aircraft		0	9,458	0	0	0	0	0	Continuing	Continuing	
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification:** This Operational Systems Development program addresses acute reliability and maintainability (R&M) deficiencies by funding prototypes of developing and mature, commercial-off-the-shelf technologies that can be incorporated into existing Air Force weapon systems and subsystems. The objective of this program is to emphasize the rapid incorporation of R&M technology "fixes" that will improve the operational capability of weapon systems and equipment at a significantly lower cost. PRAM, a level-of-funding program, depends on MAJCOM, Air Logistics Center (ALC), and field support to implement the technology once the initial investment is completed. This program is in Budget Activity 7, Operational Systems Development, because projects are being engineered for already operational weapon systems. Note: Congress added \$22 million to this program in FY 1998: \$10 million for aging aircraft; \$8 million for blade repair facility efforts; and \$4 million for aging landing gear efforts.

**(U) Acquisition Strategy:** All projects within this Program Element were awarded competitively, either by full and open competition or by amending task order contracts with competition for subcontracts.



UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0708026F Product/Reliable/Avail/Maintain Prog

(U) B. Program Change Summary (\$ in Thousands):

	FY 1997	FY 1998	FY 1999	Total Cost Cont
(U) Previous President's Budget (FY 1998 PB)	15,842	1,032	990	
(U) Appropriated Value	16,564	23,032		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-346	-772		
b. SBIR	-376	-496		
c. Omnibus/Other Above Threshold Reprogrammings	40			
d. Below Threshold Reprogrammings	-26			
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-20	
(U) Current Budget Submit/FY 1999 PB	15,856	21,764	970	Cont

## (U) Change Summary Explanation:

Funding: Changes to this PE since the previous President's Budget are due to Air Force priorities and budget constraints. Below Threshold Reprogramming for new H-1 heaters.

Schedule: Not Applicable.

Technical: Not Applicable.

(U) C. Other Program Funding Summary: Not Applicable.(U) D. Schedule Profile: Not Applicable.

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708026F Product/Reliable/Avail/Maintain Prog

2146

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
2146 PRAM	15,856	12,306	970	9,753	20,891	30,685	30,948	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	

(U) **A. Mission Description and Budget Item Justification:** PRAM addresses acute reliability and maintainability (R&M) deficiencies by funding prototypes of developing and mature, commercial-off-the-shelf technologies that can be incorporated into existing Air Force weapon systems and subsystems. The objective of this program is to emphasize the rapid incorporation of R&M technology "fixes" that will improve the operational capability of weapon systems and equipment at a significantly lower cost. Average project length is twenty-seven months. This program has a proven return on investment averaging 18:1. PRAM, a level-of-funding program, depends on MAJCOM and field support to implement the technology when the initial investment is completed.

## (U) FY 1997 (\$ in Thousands):

- (U) \$3,827 Completed efforts on Electro-Optical Viewing System (EVS) Data Presentation Group, Reusable Software for Spacecraft, Combination Generator Air Conditioner, Solid State High Band Generator, Fiber Optic Rate Gyro, Recore of Primary/Secondary Heat Exchanger, Expendable Countermeasures (EXCM) Bay Gasket, Hand-Held Directional Reflectometer, USM-464 Display and Software Media, and Module Bus Standardization Initiative.
- (U) \$2,707 Commenced blade tip project to model the repair facility at Oklahoma City Air Logistics Center. The study identified several potential improvements that would improve material flow and efficiency.
- (U) \$2,555 Continued work on aircraft subsystem R&M projects, including redesigning the inflatable overwing fairing seals and pivot bearing for the B-1.
- (U) \$2,237 Completed efforts on a bird proof canopy and an advanced hybrid oxygen system (AHOS).
- (U) \$1,646 Continued work on aerospace support equipment R&M projects, including composite mobile maintenance stands and the System 2000 Maintainer project. Completed the H-1 heater replacement.
- (U) \$1,646 Supported aging aircraft initiatives in corrosion, composites, and repair.
- (U) Provided quantitative tools needed to make intelligent, reliable forecasts of potential corrosion damage and to permit proactive engineering and maintenance to ensure the continued safe operation of aging aircraft weapon systems.
- (U) Improved the data collection of optical detection of hidden corrosion inspection records and the system ability to catalog them for analysis.
- (U) Accomplished enhancements and modifications necessary to the eddy current inspection system, using prototyped hardware as a baseline; end result is a nondestructive inspection system dedicated to lap joint corrosion inspections.
- (U) \$1,638 Completed ALR-20 panoramic indicator project and continued initial work on focal planar optics display.

Project 2146

Page 3 of 11 Pages

Exhibit R-2 (PE 0708026F)

1807

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708026F Product/Reliable/Avail/Maintain Prog

2146

- (U)	\$700	Continued airframe R&M durability patch project aimed at developing a field repair patch for vibro-acoustic cracks in sheet metal and support structures.
- (U)	\$465	Completed several short-term projects identified through Air Force Materiel Command's Technology Master Plan (TMP). TMP projects are prioritized based on operational capability, reliability and maintainability improvement, and cost.
- (U)	\$81	Continued ongoing nickel-hydrogen battery and multi-spectral satellite identification space systems efforts.
- (U)	\$15,856	Total

## (U) FY 1998 (\$ in Thousands):

- (U)	\$7,196	Begin improvement projects at Oklahoma City Air Logistics Center blade repair facility aimed at improving process flow and increasing shop efficiency.
- (U)	\$265	Complete B-1 projects focusing on subsystem R&M, significantly increasing overwing fairing seal and pivot bearing service lives.
- (U)	\$1,480	Continue work on aerospace support equipment R&M projects. Complete Advanced Technology Demonstration for next generation munition handler and complete composite mobile maintenance stands project. Begin E-3 rotodome test set effort.
- (U)	\$790	Continue work on aircraft avionics R&M projects. Complete the initial phase of the focal planar optics display and the C-141 electric starlifter project.
- (U)	\$1,137	Continue work on airframe R&M projects, including development of a durability patch for low-cost, reliable installation in the field.
- (U)	\$473	Complete projects identified through Air Force Materiel Command's TMP. TMP projects are prioritized based on operational capability, reliability and maintainability improvement, and cost.
- (U)	\$95	Complete space system efforts for nickel hydrogen battery and satellite identification.
- (U)	\$500	Initiate base infrastructure R&M projects. Begin seismic range scoring system effort.
- (U)	\$370	Start and complete high priority quick response projects identified by operational commands outside the normal annual planning process.
- (U)	\$12,306	Total

## (U) FY 1999 (\$ in Thousands):

- (U)	\$470	Continue airframe R&M projects. Begin C-130 corrosion-resistant longerons and measurement of paint thickness on fiberglass radomes efforts.
- (U)	\$320	Completed several short-term projects identified through Air Force Materiel Command's TMP. TMP projects are prioritized based on operational capability, reliability and maintainability improvement, and cost.
- (U)	\$180	Start and complete high priority, quick response R&M projects identified by operational commands.
- (U)	970	Total

Project 2146

Page 4 of 11 Pages

Exhibit R-2 (PE 0708026F)

1808

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE	PROJECT
7 - Operational System Development		0708026F Product/Reliable/Avail/Maintain Prog	2146
(U) B. <u>Program Change Summary (\$ in Thousands):</u>			
	FY 1997	FY 1998	FY 1999
(U) Previous President's Budget (FY 1998 PB)	15,842	1,032	990
(U) Current Budget Submit/FY 1999 PB	15,856	12,306	970
			Total
			Cost
			Cont
			Cont
(U) Change Summary Explanation:			
Funding: Changes to this PE since the previous President's Budget are due to Air Force priorities and budget constraints.			
Schedule: Not Applicable.			
Technical: Not Applicable.			
(U) C. <u>Other Program Funding Summary:</u> Not Applicable.			
(U) D. <u>Schedule Profile:</u> Not Applicable.			

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708026F Product/Reliable/Avail/Maintain Prog

2146

(U) A. Project Cost Breakdown (\$ in Thousands):

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) EVS Data Presentation Group	3,827	0	
(U) Blade Tip Repair Project	2,707	7,196	
(U) Aircraft Subsystem R&M	2,555	265	
(U) Aerospace Support Equipment R&M	2,237	1,480	
(U) Aging Aircraft	1,646	0	
(U) Aircraft Avionics R&M	1,638	790	
(U) Airframe R&M	700	1,137	470
(U) TMP Projects	465	473	320
(U) Space Systems R&M	81	95	
(U) Base Infrastructure R&M	0	500	
(U) Quick Response	0	370	180
(U) Total	15,856	12,306	970

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands):Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Complete</u>	<u>To Total Program</u>
Product Development Organizations										
Numerous	Various	Various	N/A	N/A	N/A	14,040	11,052	690	Cont	Cont
Government	Various	Various	N/A	N/A	N/A	1,816	1,254	280	Cont	Cont
Support and Management Organizations - In-House Support.										
Test and Evaluation Organizations - Not Applicable.										

Project 2146

Page 6 of 11 Pages

Exhibit R-3 (PE 0708026F)

1810

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998	PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE				2146
7 - Operational System Development	0708026F Product/Reliable/Avail/Maintain Prog				
<u>Government Furnished Property:</u> Not Applicable.					
Product Development Property - Not Applicable.					
Support and Management Property - Not Applicable.					
Test and Evaluation Property - Not Applicable.					
Subtotal Product Development	15,856	12,306	970	Cont	0
Subtotal Support and Management	0	0	0	0	0
Subtotal Test and Evaluation	0	0	0	0	0
Total Project	15,856	12,306	970	Cont	Cont

Project 2146

Page 7 of 11 Pages

Exhibit R-3 (PE 0708026F)

1811

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

BUDGET ACTIVITY		DATE	
7 - Operational System Development		February 1998	
PE NUMBER AND TITLE		PROJECT	
0708026F Product/Reliable/Avail/Maintain Prog		4761	

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4761 Aging Aircraft	0	9,458	0	0	0	0	0	Continuing	Continuing
Quantity of RDT&E Articles									

(U) A. Mission Description and Budget Item Justification: This program is comprised of multiple efforts which will transition needed technologies from laboratory research and commercial technology development into fieldable tools or capabilities. Projects will target critical needs of the aging fleet such as corrosion, structural integrity, and improved non-destructive inspection (NDI) methods. Corrosion-related projects include hidden corrosion detection (NDI methods such as eddy current and thermography) and developing a corrosion prediction capability. Structural integrity projects will include the development of alternate repair capabilities and capability to predict widespread fatigue damage. In addition to the NDI projects addressing corrosion detection, other NDI projects will address multi-layer crack detection and detection of cracks under composite patches. These projects are focused on developing tools (NDI equipment, computer models) and capabilities (alternate repair processes) for Air Logistics Centers (ALCs) use in extending useful aircraft service life, resolving flight safety problems, or replacing components no longer procurable. Projects will typically yield a single, validated prototype system or capability that is production ready; final depot or field implementation (equipment purchases, tech order updates, training, etc.) will be the responsibility of the Major Commands (MAJCOMs) and ALCs. There is strong emphasis on developing solutions that will benefit multiple weapon systems, thereby, reducing or eliminating stovepipe development of platform-specific solutions. Note: Aging aircraft efforts for FY 1999 and out are addressed in PE 0605011F, RDT&E for Aging Aircraft.

(U) FY 1997: Not Applicable.

(U) FY 1998 (\$ in Thousands):

- (U) \$6,000 Support Aging Aircraft initiatives in NDI, structural integrity, and corrosion.
- (U) Further expand the capability of the ultrasonic scan to detect fatigue cracks in second layer structure. This effort will evaluate potential applications for C-141, C-130, and F-15 inspections.
- (U) Improve the throughput for scanning and erasing the reusable phosphor screen for filmless radiography, which should reduce the touch labor required for manual processing.
- (U) Expand the use of composite patch repairs beyond wing structures to include thin-skin fuselage structures.
- (U) Develop corrosion growth rate model, evaluate corrosion monitoring devices, evaluate material substitution as a repair option, and evaluate commercial maintenance practices to determine applicability to military aircraft.
- (U) Develop engineering logistics analysis tools to help predict future failure rates, maintain flight safety, and extend the life of aircraft landing gear.
- (U) \$3,458
- (U) \$9,458
- Total

Project 4761

Page 8 of 11 Pages

Exhibit R-2 (PE 0708026F)

1812

UNCLASSIFIED

**RPT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)**

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

0708026F Product/Reliable/Avail/Maintain Prog

# PROJECT

4761

(U) FY 1999: Not Applicable.

**(U) B. Program Change Summary (\$ in Thousands):**

(U) Previous President's Budget (FY 1998 PB)

(U) Current Budget Submit/FY 1999 PB

(U) Change Summary Explanation:

**Funding:** Congress added \$10 million to this Program in FY 1998 for aging aircraft.

**Schedule: Not Applicable.**

**Technical: Not Applicable.**

(U) C. Other Program Funding: Not Applicable.

**(U) D. Schedule Profile:**

[illegible]

(U) RFP Release

(U) Contract Awards

Project 4761

Page 9 of 11 Pages

Exhibit R-2 (PE 0708026F)

1813

UNCLASSIFIED



UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708026F Product/Reliable/Avail/Maintain Prog

4761

## (U) A. Project Cost Breakdown (\$ in Thousands):

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) Aging Aircraft Initiatives	0	6,000	0
(U) Aging Landing Gear	0	3,458	0
(U) Total	0	9,458	0

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands):

### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
SAIC	Mod	TBD			0	0	1,900	0	0	1,900
SW Research	Mod	TBD			0	0	1,500	0	0	1,500
NCI	TBD	TBD			0	0	1,990	0	0	1,990
Liberty Tech	CPFF	TBD			0	0	475	0	0	475
General Atomics	TBD	TBD			0	0	3,458	0	0	3,458
TBD	TBD	TBD			0	0	135	0	0	135

Support and Management Organizations - Not Applicable.

Test and Evaluation Organizations - Not Applicable.

Government Furnished Property: Not Applicable.

Project 4761

Page 10 of 11 Pages

Exhibit R-3 (PE 0708026F)

1814

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0708026F Product/Reliable/Avail/Maintain Prog								4761	
Item Description	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Budget				Total Prior to FY 1997	Budget to Complete	Total Program	
				FY 1997	FY 1998	FY 1999	Budget				
<u>Product Development Property - None</u>											
<u>Support and Management Property - None</u>											
<u>Test and Evaluation Property - None</u>											
Subtotal Product Development				0	0	9,458	0	0	0	Cont	0
Subtotal Support and Management				0	0	0	0	0	0	0	0
Subtotal Test and Evaluation				0	0	0	0	0	0	0	0
Total Project				0	0	9,458	0	0	0	Cont	0

Project 4761

Page 11 of 11 Pages

Exhibit R-3 (PE 0708026F)

1815

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0708071F

UNCLASSIFIED

PE TITLE: Joint Logistics Program - Ammunition System

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0708071F Joint Logistics Program - Ammunition System								4679	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4679	Ammunition Management Standard System (AMSS)	13,780	0*	16,086	13,474	11,554	11,672	11,814	14,748	101,470	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

All funds in FY 97 and FY 99 through 03 were converted from Operations & Maintenance (O&M) to RDT&E to align with the actual use of the funds for development activity.  
 \* \$8,342 of FY 98 funds were reclassified to RDT&E from the O&M Appropriation.

(U) A. Mission Description and Budget Item Justification  
 Air Force is the Executive Agent for AMSS. AMSS is the joint migration system being developed to improve and integrate ammunition management business functions and data across the DoD. It directly supports the goals of the DoD Logistics Strategic Plan (1996 edition) to: reduce logistics response times, provide total asset visibility, develop seamless logistics systems, and streamline the logistics infrastructure. When fully operational, AMSS will provide integrated, flexible, and timely ammunition management information necessary for the planning, provisioning, and sustainment of military operations world-wide. The first release of the system will contain sufficient functionality to all Services to allow the current legacy systems to either be turned off completely or used minimally. The functionality to be included in the first release of AMSS has been identified by the Services' Configuration Management Team. Additional required functionality will be added in future releases based upon Service priority and available funding. When completely developed, integrated and implemented AMSS will support the functionality for all ammunition management at the Inventory Control Point (ICP) and command levels. This program is in Budget Activity 7 - Operational System Development because it modernizes automated information systems.

(U) Acquisition Strategy: All Contracts within this Program Element were awarded after full and open competition.

(U) FY 1997 (\$ in Thousands):  
 - (U) \$8,370 Software Development  
 - (U) \$3,703 Support Contractors, Mission support, etc.  
 - (U) \$1,707 Government Furnished Equipment (GFE)/Commercial Off The Shelf (COTS)  
 - (U) \$13,780 Total

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708071F Joint Logistics Program - Ammunition

4679

System

(U) FY 1998\* (\$ in Thousands):

- (U) \$3,479 Software Development  
 - (U) \$3,829 Support Contractors, Mission support, etc  
 - (U) \$830 GFE/COTS  
 - (U) \$204 GFE and COTS software update, debug, maintenance.  
 - (U) \$8,342 Total

\* FY 98 funds were reclassified to RDT&amp;E from the O&amp;M Appropriation.

(U) FY 1999 (\$ in Thousands):

- (U) \$11,120 Software Development  
 - (U) \$4,245 Support Contractors, Mission support, etc  
 - (U) \$721 GFE and COTS software update, debug, maintenance.  
 - (U) \$16,086 Total

## (U) B. Program Change Summary (\$ in Thousands)

Total  
Cost  
TBD  
TBD

FY 1997  
FY 1998\*  
FY 1999  
0

(U) Previous President's Budget

(U) Appropriated Value

(U) Adjustments to Appropriated Value

a. Cong Reductions

b. SBIR

c. Omnibus or Other Above Threshold Reprogram

d. Below Threshold Reprogramming

(U) Adjustments to Budget Years Since FY 1998 PB

(U) Current Budget Submit/FY 99 Presidents Budget

(U) Change Summary Explanation:

Funding: FY 97 1415-3 reprogramming action converted funds from O&M to RDT&E. All funds in FY 99 through 03 were converted from O&M to RDT&E to align with the actual use of the funds for development activity.

\* \$8,342 of FY 98 funds were reclassified to RDT&amp;E from the O&amp;M Appropriation.

Schedule: No change.

Technical: No change.

Project 4679

Page 2 of 5 Pages

Exhibit R-2 (PE 0708071F)

1818

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0708071F Joint Logistics Program - Ammunition System	4679	
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u>			
N/A			
(U) D. <u>Schedule Profile</u>			
		FY 1997	FY 1998
		1 2 3	4 1 2 3 4
(U) Phase One			
Development Contract Award	X		
Critical Design Review			X
Full Scale Development Complete			X
Project 4679		Page 3 of 5 Pages	
		Exhibit R-2 (PE 0708071F)	

1819

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708071F Joint Logistics Program - Ammunition System

4679

## (U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998*	FY 1999
(U) Software Development EDS	8,370	3,479	11,120
(U) Other Govt Costs	3,703	3,829	4,245
(U) Government Furnished Equipment (GFE)/COTS	1,707	830	0
(U) GFE and COTS software update, debug, maintenance	0	204	721
(U) Total	13,780	8,342	16,086

\* FY 98 funds were reclassified to RDT&amp;E from the O&amp;M Appropriation.

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

### Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
----------------------------------------------	-----------------------------------------	--------------------------	-------------------------	--------------------	------------------------	----------------	----------------	----------------	--------------------	---------------

### Product Development Organization

EDS	Cost + Award Fee	7 Jul 97	\$24,254	\$27,662*	-0-	\$8,370*	\$3,479*	\$11,120*	\$4,693*	\$27,662*
Unknown	TBD	TBD		24,070*	-0-	-0-	-0-	-0-	24,070*	24,070*

\*Includes 2% DISA fee

### Support and Management Organizations:

Innolog, KPMG, MITRE, MCR			12,874	12,874	-0-	2,500	1,790	1,438	7146	12,874
SPO WPAFB			12,777	12,777	-0-	1,103	1,939	2,407	7,602	13,051
GFE and COTS software update, debug, maintenance.	TBD	TBD	9,418	9,418	-0-		204	721	8,493	9,418

Project 4679

Page 4 of 5 Pages

Exhibit R-3 (PE 0708071F)

1820

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708071F Joint Logistics Program - Ammunition

4679

## System

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Test and Evaluation Organizations:</u>										
Army OPTEC			1,000	1,000	-0-	-0-	-0-	200	-800-	1000
IV&V			1,380	1,380	-0-	100	100	200	-980-	1,380
<u>(U) B. Budget Acquisition History and Planning Information (Continued) (\$ in Thousands)</u>										
<u>Government Furnished Property:</u>										
Contract										
Item Description	Method/Type or Funding Vehicle	Award or Obligation Date	Delivery Date	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998*	Budget FY 1999	Budget to Complete	Total Program	
Product Development Property										
COTS S/W and H/W	GSA Sc.	As Req'd	As Req'd	-0-	1,707	830	-0-	-0-	2,537	
Support and Management Property										
COTS S/W	GSA Sch.	As Req'd	As Req'd	-0-	-0-	-0-	-0-	3,229	3,229	
Hardware	GSA Sch.	As Req'd	As Req'd	-0-	-0-	-0-	-0-	6,249	6,249	
<u>Test and Evaluation Property: Shared with development resources</u>										
Subtotal Product Development				-0-	10,077	4,309	11,120	28,763	54,269	
Subtotal Support and Management				-0-	3,603	3933	4566	32,719	44,821	
Subtotal Test and Evaluation				-0-	100	100	400	1,780	2,380	
Total Project				-0-	13,780	8,342	16,086	63262	101,470	

\* Funds have been reclassified to RDT&amp;E from O&amp;M Appropriation.

Project 4679

Page 5 of 5 Pages

Exhibit R-3 (PE 0708071F)

1821

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0708611F

UNCLASSIFIED

PE TITLE: Support Systems Development (SSD)

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
PE NUMBER AND TITLE											
0708611F Support Systems Development (SSD)											
BUDGET ACTIVITY											
7 - Operational System Development											
COST (\$ In Thousands)											
Total Program Element (PE) Cost	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost		
3090 Embedded Computer Resources Support Improvement Program (ESIP)	25,329	3,404	23,010	23,840	31,506	32,057	31,087	Continuing	Continuing		
	2,913	2,052	2,344	2,428	2,419	3,461	3,523	Continuing	Continuing		
3318 Product Data Systems Modernization (PDMS)	1,933	1,352	1,349	1,391	3,809	2,464	2,509	Continuing	Continuing		
3759 Air Force Support Equipment Management (AFSEM)**	3,261	0	0	0	0	0	0	0	TBD		
4654 Integrated Maintenance Data System (IMDS)*	17,222	0*	19,317	20,021	25,278	26,132	25,055	Continuing	Continuing		
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

\* IMDS FY 98 funds (\$18.541 million) reside within PE 0603108F. Beyond FY 98, all IMDS funds reside within PE 0708611F, project 4654.

\*\* AFSEM program terminated at end of FY 97.

**(U) A. Mission Description and Budget Item Justification**

This program will develop and field an AF standard maintenance information system to integrate information systems supporting Air Force maintenance activities into a single open architecture, modern decision support system. This enhanced decision support system will increase operational production capability and support system efficiency, while decreasing mobility infrastructure requirements and cost of operations. Other projects improve support of embedded computer system software, automate and standardize weapon system support processes, establish advanced support methodologies, provide automated tools and infrastructure environments, and improve readiness support to facilitate rapid software turnaround in response to changing mission and/or threat requirements. Efforts perform research and development to update Air Force digital data standards to commercial industry standards that support the Continuous Acquisition and Life-Cycle Support (CALC) concept. This program funds the Air Force support equipment (SE) management objective to develop, support, distribute, and maintain products that improve Air Force SE acquisition. It supports the Air Force Automatic Test Systems (ATS) Product Master Plan and Air Force ATS Database to identify and evaluate all Air Force ATS for both long and short-term planning. This program is in budget activity 7 - Operational System Development, because projects are being engineered to support already operational weapon systems.

**(U) Acquisition Strategy:**

All major contracts within this Program Element were awarded after full and open competition.

UNCLASSIFIED

**UNCLASSIFIED**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

## 7 - Operational System Development

**0708611F Support Systems Development (SSD)**

**(U) B. Program Change Summary (\$ in Thousands)**

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total</u>
(U) Previous President's Budget FY 1998 PB				<u>Cost</u>
(U) Appropriated Value	8,107	3,657	3,767	Continuing
(U) Adjustments to Appropriated Value	8,405	3,657		
a. Congressional/General Reductions	-178	-168		
b. SBIR	-120	-85		
c. Omnibus or Other Above Threshold Reprogramming	17,332			
d. Below Threshold Reprogramming	-44			
e. Rescissions	-66			
(U) Adjustments to Budget Years Since FY 1998 PB			19,243	
(U) Current Budget Submit/FY 1999 President's Budget	25,329	3,404	23,010	Continuing

(U) Change Summary Explanation:

**Funding:** Funding for IMDS for FY 97 and FY 99 and outyears transferred from PE 0603108F. FY 98 funds (\$19.753 million) still remain in PE 0603108F because FY 97 reclassification was approved after the FY 98 President's Budget was finalized.

**Schedule:** Not applicable.

**Technical:** Not applicable.

(U) C. Other Program Funding Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>To</u>	<u>Total</u>
								<u>Compl</u>	<u>Cost</u>
								<u>Cont</u>	<u>Cont</u>
(U) Other Procurement - AF, BA 7, P-1:55, PE 0708611F (Project 3090 ESIP)	1,645	1,997	2,632	2,284	2,322	2,378	2,434	Cont	Cont
(U) O&M- AF (Project 3090, ESIP)	11,622	12,096	10,543	10,989	14,127	14,391	14,668	Cont	Cont
(U) Other Procurement - AF BA 7, P-1:55, PE 0708611F (Project 4654 IMDS)	0	2,800	2,751	2,721	2,686	2,688	2,648	Cont	Cont
(U) O&M - AF (Project 4654 IMDS)	0	886	949	1,879	1,855	1,891	1,926	Cont	Cont

**UNCLASSIFIED**

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE									
7 - Operational System Development		0708611F Support Systems Development (SSD)									
<u>Related RDT&amp;E:</u>											
(U)	PE 0603108F, Integrated Data Systems (IDS)*	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total	
		0	18,541	0	0	0	0	0	Compl	Cost	
									Cont	Cont	
* RDT&E funds located within PE 0603108F, Project 4427, Integrated Maintenance Data Systems (IMDS).											
(U) D. <u>Schedule Profile:</u> See individual projects.											

Page 3 of 23 Pages

Exhibit R-2 (PE 0708611F)

1825

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708611F Support Systems Development (SSD)

3090

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3090 Embedded Computer Resources Support Improvement Program (ESIP)	2,913	2,052	2,344	2,428	2,419	3,461	3,523	Continuing	Continuing

(U) A. Mission Description and Budget Item Justification

This project conducts research to improve support of embedded computer system software. It encompasses automation and standardization of support processes, advanced support methodologies, tools and environments, and readiness support to facilitate rapid turnaround of software in response to changing mission and/or changing threat requirements. This project is in Budget Activity 7, Operational System Development, because efforts are being engineered to support already operational weapon systems.

(U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition.

(U) FY 1997 (\$ in Thousands):

- (U) \$25 Demonstrate real-time fault-tolerant software demonstration.
- (U) \$1,008 Develop virtual simulator module switching unit.
- (U) \$600 RF testing techniques.
- (U) \$470 Enhanced Ada re-engineering demonstration.
- (U) \$470 JOVIAL prototype verification and validation system.
- (U) \$70 Demonstrated automated visualization capability.
- (U) \$270 Advanced Avionics Verification and Validation (AAV&V).
- (U) \$2,913 Total

(U) FY 1998 (\$ in Thousands):

- (U) \$130 Advanced Avionics Verification and Validation (AAV&V).
- (U) \$165 Adaptive Software Technology Development (ASTD).
- (U) \$255 Automated Operational Flight Program (OFP) Validation (AutoVal).
- (U) \$255 Incremental Software Evolution for Real-Time (INSERT).
- (U) \$390 Legacy Software Re-Engineering Technology (LSRET).
- (U) \$130 Reconfigurable Avionics Computer Emulator (RACE).
- (U) \$130 System Avionics Laboratory Support (SALS).
- (U) \$597 Virtual Test Station (VTS).
- (U) \$2,052 Total

Project 3090

Page 4 of 23 Pages

Exhibit R-2 (PE 0708611F)

1826

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

3090

## (U) FY 1999 (\$ in Thousands):

- (U) \$350 Adaptive Software Technology Development (ASTD).  
 - (U) \$320 Automated Operational Flight Program (OFF) Validation (AutoVal).  
 - (U) \$255 Incremental Software Evolution for Real-Time (INSERT).  
 - (U) \$307 Legacy Software Re-Engineering Technology (LSRET).  
 - (U) \$130 Reconfigurable Avionics Computer Emulator (RACE).  
 - (U) \$130 System Avionics Laboratory Support (SALS).  
 - (U) \$597 Virtual Test Station (VTS).  
 - (U) \$255 Future Embedded Computer Systems Support Technologies (FEST)  
 - (U) \$2,344 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget FY 1998 PB	2,913	2,207	2,391	
(U) Appropriated Value	2,975			
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-62	-109		
b. SBIR		-46		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions			-47	
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY 1999 President's Budget	2,913	2,052	2,344	Continuing

## (U) Change Summary Explanation:

Funding: Not applicable  
 Schedule: Not applicable.  
 Technical: Not applicable.

## (U) C. Other Program Funding Summary (\$ in Thousands):

See page 2, C., Other Program Funding Summary.

Project 3090

Page 5 of 23 Pages

Exhibit R-2 (PE 0708611F)

1827

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
3090

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

(U) D. Schedule Profile

	FY 1997			FY 1998			FY 1999		
	1	2	3	4	1	2	3	4	
(U) Demonstrate real-time fault tolerant software techniques.		X							
(U) Develop virtual simulator module switching unit.	X								
(U) RF testing techniques.				X					
(U) Enhanced Ada re-engineering demonstration.				X					
(U) Begin Advanced Avionics Verification and Validation (AAV&V).			X						
(U) Complete Advanced Avionics Verification and Validation (AAV&V).					X				
(U) JOVIAL prototype verification and validation system.	X								
(U) Demonstrate automated visualization capability.		X							
(U) Begin Automated OFP Validation (AutoVal)					X				
(U) Complete Automated OFP Validation (AutoVal)						X		X	
(U) Begin Incremental Software Evolution for Real-Time (INSERT).									
(U) Complete Incremental Software Evolution for Real-Time (INSERT).							X		
(U) Begin Legacy Software Re-Engineering Technology (LSRET).						X			
(U) Complete Legacy Software Re-Engineering Technology (LSRET).							X		
(U) Begin Virtual Test Station.						X			
(U) Complete Virtual Test Station.								X	
(U) Future Embedded Computer Systems Support Technologies (FEST)								X	

Project 3090

Page 6 of 23 Pages

Exhibit R-2 (PE 0708611F)

1828

UNCLASSIFIED

UNCLASSIFIED

# RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

PROJECT

3090

PE NUMBER AND TITLE

0708611F Support Systems Development (SSD)

## 7 - Operational System Development

### (U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Demonstrate real-time fault tolerant software techniques.	25		
(U) Develop virtual simulator module switching unit.	1,008		
(U) RF testing techniques.	600		
(U) Enhanced Ada re-engineering demonstration.	470		
(U) JOVIAL prototype verification and validation system.	470		
(U) Demonstrate automated visualization capability.	70		
(U) Advanced Avionics Verification and Validation (AAV&V).	270	130	
(U) Adaptive Software Technology Development (ASTD).		165	350
(U) Automated OFP Validation (AutoVal).		255	320
(U) Incremental Software Evolution for Real-Time (INSERT).		255	255
(U) Legacy Software Re-Engineering Technology (LSRET).		390	307
(U) Reconfigurable Avionics Computer Emulator (RACE).		130	130
(U) System Avionics Laboratory Support (SALS).		130	130
(U) Virtual Test Station (VTS).		597	597
(U) Future Embedded Computer Systems Support Technologies (FEST).			255
(U) Total	2,913	2,052	2,344

### (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

#### Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Product Development Organizations										
SAIC	D.O.	Various	N/A	N/A	\$2,913	\$697	\$660	\$406	N/A	N/A
TASC	D.O.	Various	N/A	N/A	\$1,449	\$931	\$450	\$100	N/A	N/A
TRW	D.O.	Various	N/A	N/A	\$1,131	0	0	0	0	\$1,131
Various	Various	Various	N/A	N/A	516	\$348	\$587	\$549	N/A	N/A

Project 3090

Page 7 of 23 Pages

Exhibit R-3 (PE 0708611F)

1829

UNCLASSIFIED



UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)									
DATE February 1998									
PROJECT 3090									
PE NUMBER AND TITLE									
0708611F Support Systems Development (SSD)									
BUDGET ACTIVITY									
7 - Operational System Development									
Contractor or Contract									
Government Performing Activity									
Method/Type or Funding Vehicle									
Award or Obligation Date									
Performing Activity EAC									
Project Office EAC									
Total Prior to FY 1997									
Budget FY 1997									
Budget FY 1998									
Budget FY 1999									
Budget to Complete									
Total Program									
Support and Management Organizations									
OO-ALC	N/A	N/A			\$937	\$355	\$1,289	N/A	N/A
Test and Evaluation Organizations									
Not applicable.									
Government Furnished Property:									
Not applicable.									
Subtotal Product Development									
Subtotal Support and Management				\$6,009	\$1,976	\$1,697	\$1,055	N/A	N/A
Subtotal Test and Evaluation				0	\$937	\$355	\$1,289	N/A	N/A
				0	0	0	0	N/A	N/A
Total Project				\$6,009	\$2,913	\$2,052	\$2,344	N/A	N/A

Project 3090

Page 8 of 23 Pages

Exhibit R-3 (PE 0708611F)

1830

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

3318

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3318 Product Data Systems Modernization (PDSM)	1,933	1,352	1,349	1,391	3,809	2,464	2,509	Continuing	Continuing

## (U) A. Mission Description and Budget Item Justification

This project implements digital product data management within the Air Force Integrated Weapon System Management infrastructure and ensures uninterrupted transition of functional capabilities of legacy systems to the new joint systems. This project is in Budget Activity 7, Operational System Development, because activities support development and implementation of common information system programs.

## (U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition.

## (U) FY 1997 (\$ in Thousands):

(U) \$300 Manage AF technical data activities.  
 (U) \$265 Plan/participate/activate JEDMICS sites.  
 (U) \$206 Develop and maintain digital data templates for new acquisition technical orders.  
 (U) \$420 Plan/participate in JCALS to ensure AF requirements and schedules are met.  
 (U) \$474 Activate AF JCALS sites to ensure timely and accurate data is available and useable.  
 (U) \$208 Test digital data specifications/standards and represent AF at international standards' activities.  
 (U) \$60 Provide direct support to weapon systems, Logistics and Product Centers, and MAJCOMs.  
 (U) \$1,933 Total

## (U) FY 1998 (\$ in Thousands):

(U) \$243 Manage AF technical data activities.  
 (U) \$24 Plan/participate/activate/sustain JEDMICS.  
 (U) \$188 Develop and maintain digital data templates for new acquisition technical orders.  
 (U) \$253 Plan/participate in JCALS to ensure AF requirements are met.  
 (U) \$394 Activate AF JCALS sites to ensure timely and accurate data is available and useable.  
 (U) \$188 Test digital data specifications/standards and represent AF at international standards activities.  
 (U) \$62 Provide direct support to weapon systems, Logistics and Product Centers, and MAJCOMs.  
 (U) \$1,352 Total

Project 3318

Page 9 of 23 Pages

Exhibit R-2 (PE 0708611F)

1831

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

3318

## (U) FY 1999 (\$ in Thousands):

- (U) \$232 Manage AF technical data activities.
- (U) \$12 Sustain JEDMICS.
- (U) \$180 Develop and maintain digital data templates for new acquisition technical orders.
- (U) \$243 Plan/participate in JCALS to ensure AF requirements are met.
- (U) \$449 Activate AF JCALS sites to ensure timely and accurate data is available and useable.
- (U) \$180 Test digital data specifications/standards and represent AF at international standards activities.
- (U) \$53 Provide direct support to weapon systems, Logistics and Product Centers, and MAJCOMs.
- (U) \$1,349 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost Continuing
(U) Previous President's Budget FY 1998 PB	1,933	1,450	1,376	
(U) Appropriated Value	1,974			
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-41	-59		
b. SBIR		-39		
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB			-27	
(U) Current Budget Submit/FY 1999 President's Budget	1,933	1,352	1,349	Continuing

## (U) Change Summary Explanation:

Funding: Not applicable

Schedule: Not applicable.

Technical: Not applicable.

Project 3318

Page 10 of 23 Pages

Exhibit R-2 (PE 0708611F)

1832

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0708611F Support Systems Development (SSD)	3318	
(U) C. <u>Other Program Funding Summary (\$ in Thousands)</u> Not applicable.			
(U) D. <u>Schedule Profile</u> Not applicable. This is a support and management level of effort program. All activities are ongoing.			

Project 3318

Page 11 of 23 Pages

Exhibit R-2 (PE 0708611F)

Page 11 of 23 Pages

Exhibit R-2 (PE 0708611F)

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

3318

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Manage AF technical data activities.	300	243	232
(U) Plan/participate/activate JEDMICS sites.	265	24	12
(U) Test digital data specifications/standards and represent AF at international standards activities.	208	188	180
(U) Develop and maintain digital data templates for new acquisition technical orders	206	188	180
(U) Plan/participate in JCALS to ensure AF requirements and schedules are met.	420	253	243
(U) Activate AF JCALS sites to ensure timely and accurate data is available and useable.	474	394	449
(U) Provide direct support to weapon systems, Logistics and Product Centers, and Major Commands (MAJCOMs).	60	62	53
(U) Total	1,933	1,352	1,349

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Not applicable.										
<u>Support and Management Organizations</u>										
RJO	ECRC	Var	N/A	N/A	6,684	597	418	416	TBD	TBD
LOGTEC	GSA	Var	N/A	N/A	10,027	978	684	683	TBD	TBD
BTAS	8a	Var	N/A	N/A	0	358	250	250	TBD	TBD

Project 3318

Page 12 of 23 Pages

Exhibit R-3 (PE 0708611F)

1834

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998
BUDGET ACTIVITY										PE NUMBER AND TITLE	PROJECT
7 - Operational System Development										0708611F Support Systems Development (SSD)	3318
Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program	
<u>Test and Evaluation Organizations</u> Not applicable.											
<u>Government Furnished Property:</u> Not applicable.											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
					0	0	0	0	0	0	
					16,711	1,933	1,352	1,349	TBD	TBD	
					0	0	0	0	0	0	
					16,711	1,933	1,352	1,349	TBD	TBD	

Exhibit R-3 (PE 0708611F)

Page 13 of 23 Pages

Project 3318

1835

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

## 7 - Operational System Development

PE NUMBER AND TITLE

0708611F Support Systems Development (SSD)

PROJECT

3759

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
3759 Air Force Support Equipment Management (AFSEM)**	3,261	0	0	0	0	0	0	0	TBD

\*\* AFSEM program terminates at end of FY 97.

(U) A. Mission Description and Budget Item Justification

The Automatic Test Systems (ATS) Product Group Manager (PGM) Product Master Plan (PMP) and ATS Database development effort is designed to give the ATS Product Group Manager (PGM) the tools to track and plan Air Force ATS direction. The PMP will support standardization and ATS PGM long-term planning by capturing essential data on all Air Force ATS. The Database will include all ATS identified in the PMP and be used to interface with Integrated Weapon System Master Plans. The ATS Database will also include the ATS Tracking Requirements Database. It will provide ATS users and managers the capability to determine existing ATS inventory and ATS developments. The ATS Database will be made available remotely to ATS PGM customers via Ethernet Local Area Network and be accessible on the World Wide Web. The follow-on effort to use the developed ATS Product Master Plan and ATS Database tools require specialized studies focusing on targeted ATS product lines to achieve ATS standardization and common support equipment goals. The ATS Standardization effort will accomplish analyses, development and/or acquisition plans for standardized ATS and ATS software to satisfy replacement requirements for aging/unsupportable Depot and intermediate avionics ATS, and include expansion capabilities for the addition of new weapon system requirements. Accomplishment of up-front ATS requirements analyses with a goal to provide improved logistics support for multiple weapon systems, while downsizing the Air Force ATS inventory, will ensure Air Force and DoD goals are met. This program is in Budget Activity 7, Operational System Development, because projects are being engineered to support already operational weapon systems.

(U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition.

(U) FY 1997	
- (U) 367	Develop detailed Product Line Master Plans.
- (U) 41	Update ATS Database.
- (U) 7	Program Management Support.
- (U) 2,846	SPARES Project - Congressional add
- (U) 3,261	Total

Project 3759

Page 14 of 23 Pages

Exhibit R-2 (PE 0708611F)

1836

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

3759

(U) FY 1998

Not applicable. Program terminated.

(U) FY 1999

Not applicable. Program terminated.

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget FY 1998 PB	3,261	0	0	3,261
(U) Appropriated Value	3,456			
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions	-75			
b. SBIR	-120			
c. Omnibus or Other Above Threshold Reprogramming				
d. Below Threshold Reprogramming				
e. Rescissions				
(U) Adjustments to Budget Years Since FY 1998 PB	3,261	0	0	3,261
(U) Current Budget Submit/FY 1999 President's Budget				

## (U) Change Summary Explanation:

Funding: AFSEM efforts terminated at end of FY97.

Schedule: Not applicable.

Technical: Elimination of AFSEM funding will limit the ability of the ATS PGM to track and plan ATS development efficiently.

(U) C. Other Program Funding Summary (\$ in Thousands)

Not applicable.

Project 3759

Page 15 of 23 Pages

Exhibit R-2 (PE 0708611F)

1837

UNCLASSIFIED



**UNCLASSIFIED**

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE \_\_\_\_\_

February 1998

## BUDGET ACTIVITY

PE NUMBER AND TITLE

## 7 - Operational System Development

**0708611F Support Systems Development (SSD)**

# PROJECT

**3759**

**(U) D. Schedule Profile**

1	2	<u>FY 1997</u>	3
---	---	----------------	---

<u>FY 1999</u>	3
2	

4

(U) Complete program management support

(U) Complete update of ATS Database

(U) Complete maintaining of ATS

## Database software

(U) Complete development of detailed

### Product Line Master Plans (Continue)

<u>FY 1998</u>	3
2	

1

---

23

4

4 X

X

X

X

Project 3759

Page 16 of 23 Pages

**Exhibit R-2 (PE 0708611F)**

1838

**UNCLASSIFIED**

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

3759

(U) A. Project Cost Breakdown (\$ in Thousands)

	FY 1997	FY 1998	FY 1999
(U) Develop detailed Product Line Master Plans.	367		
(U) Update ATS Database.	41		
(U) Program Management Support.	7		
(U) SPARES Project - Congressional add	2,846		
(U) Total	3,261		

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
General Atomics	FFP		N/A	N/A	0	2,846	0	0	0	2,846
SAIC		16 Jul 97	N/A	N/A	1,120	408	0	0	0	1,528
Various	Various		N/A	N/A	363	0	0	0	0	363
<u>Support and Management Organizations</u>										
PC System	Desktop V	21 Jul 97	N/A	N/A	0	5	0	0	0	5
ESC	N/A		N/A	N/A	137	2	0	0	0	139

Test and Evaluation Organizations

Not applicable.

Government Furnished Property:

Not applicable.

Subtotal Product Development

Subtotal Support and Management

Subtotal Test and Evaluation

Total Project

Subtotal Product Development	1,483	3,254	0	0	0	0	0	0	0	4,737
Subtotal Support and Management	137	7	0	0	0	0	0	0	0	144
Subtotal Test and Evaluation	0	0	0	0	0	0	0	0	0	0
Total Project	1,620	3,261	0	0	0	0	0	0	0	4,881

Exhibit R-3 (PE 0708611F)

Page 17 of 23 Pages

Project 3759

1839

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708611F Support Systems Development (SSD)

4654

COST (\$ In Thousands)	FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
4654 Integrated Maintenance Data System (IMDS)*	17,222	0*	19,317	20,021	25,278	26,132	25,055	Continuing	Continuing

\* IMDS FY 98 funds (\$18.541 million) reside within PE 0603108F. Beyond FY 98, all IMDS funds reside within PE 0708611F, project 4654.

(U) A. Mission Description and Budget Item Justification

The IMDS program is an evolutionary acquisition program to develop and field an AF standard maintenance information system. This program element integrates information systems supporting Air Force maintenance activities into a single open architecture, modern decision support system. This enhanced decision support system will increase operational production capability and support system efficiency, while decreasing mobility infrastructure requirements and cost of operations. The IMDS System will be integrated with the Combat Support Information System (CSIS) being developed by the Global Combat Support System - Air Force (GCSS-AF) Program. IMDS integrates multiple and diverse maintenance Management Information Systems into a single open system client/server network. IMDS will provide a single virtual data repository for access by all Air Force command levels. Full IMDS capability is reached through six increments of the application software, each increment building on the previous one. The first increment entered test at Eglin AFB July 97 after one year of development. The second increment will enter test in Summer 98 with delivery starting to the field in 2<sup>nd</sup> Quarter FY98. Increments 1&2 establish core capabilities at the retail level. Increment 3 starts wholesale level functionality as well as continued expansion of retail capabilities. This program is Budget Activity 7, Operational System Development, because projects are being engineered to support already operational weapon systems.

(U) Acquisition Strategy:

All major contracts within this Program Element were awarded after full and open competition.

(U) FY 1997 (\$ in Thousands):

- (U)	IMDS system contract
- (U)	Increment 1 (development & fielding of base-level beta version to Eglin AFB, migration of TICARRS (The Interim CAMS (Core Automated Maintenance System) and REMIS (Reliability and Maintainability Information System) Reporting System) functionality)
- (U)	Increment 2 (enhancement of beta version to core required capabilities for Eglin AFB, and Operational Test at Moody AFB)
- (U)	Operations
- (U)	Support Contractors (technical engineering & management support)
- (U)	SPO Operations (TDY, equipment, & supply)
- (U)	Total

Project 4654

Page 18 of 23 Pages

Exhibit R-2 (PE 0708611F)

1840

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT
7 - Operational System Development	0708611F Support Systems Development (SSD)		4654
(U) FY 1998 (\$ in Thousands) (funding resides within PE 0603108F, project 4427):			
- (U)	IMDS system contract		
- (U)	Increment 2 (continue enhancement of beta version to core required capabilities for Eglin AFB, and Operational Test at Moody AFB)		
- (U)	Increment 3 (enhancement of backshop/full base-level requirements, initiation of REMIS (Reliability and Maintainability Information System) replacements)		
- (U)	Operations		
- (U)	Support Contractors (technical engineering & management support)		
- (U)	SPO Operations (TDY, equipment, & supply)		
- (U)	Total		
(U) FY 1999 (\$ in Thousands):			
- (U)	IMDS system contract		
- (U)	Increment 3 (continue enhancement of backshop/full base-level requirements, initiation of REMIS (Reliability and Maintainability Information System) replacement)		
- (U)	Increment 4 (Complete REMIS functionality, initiate depot maintenance capabilities)		
- (U)	Operations		
- (U)	Support Contractors (technical engineering & management support)		
- (U)	SPO Operations (TDY, equipment, & supply)		
- (U)	Total		

Project 4654

Page 19 of 23 Pages

Exhibit R-2 (PE 0708611F)

1841

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 EXHIBIT)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

0708611F Support Systems Development (SSD)

4654

(U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998*	FY 1999	Total Cost Continuing
(U) Previous President's Budget FY 1998 PB				
(U) Appropriated Value	0	0	0	
(U) Adjustments to Appropriated Value	0			
a. Congressional/General Reductions				
b. SBIR				
c. Omnibus or Other Above Threshold Reprogramming	17332			
d. Below Threshold Reprogramming	-44			
e. Rescissions	-66			
(U) Adjustments to Budget Years Since FY 1998 PB			19,317	
(U) Current Budget Submit/FY 1999 President's Budget	17,222	0	19,317	Continuing

## (U) Change Summary Explanation:

Funding: \* IMDS FY 98 funds (\$18.541 million) reside within PE 0603108F. Beyond FY 98, all IMDS funds reside within PE 0708611F, project 4654.

Schedule: OT&E delayed one year due to funding cuts and Quadrennial Defense Review (QDR) impacts to beta sites and requirements changes.

Technical: Not applicable.

(U) C. Other Program Funding Summary (\$ in Thousands)

See page 2, C., Other Program Funding Summary.

(U) D. Schedule Profile

	FY 1997		FY 1998		FY 1999	
	1	2	3	4	1	2
(U) Complete Development of IMDS core capability						
(U) OT&E Core (Increments 1, 2, & 3)						
(U) IMDS System Contract (Inc 3)					X	
(U) IMDS System Contract (Inc 4)						X

Project 4654

Page 20 of 23 Pages

Exhibit R-2 (PE 0708611F)

1842

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT	
7 - Operational System Development	0708611F Support Systems Development (SSD)	4654	
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>			
		<u>FY 1997</u>	<u>FY 1998*</u>
(U) IMDS System Contract			<u>FY 1999</u>
Increment 1		12,419	
Increment 2		900	
Increment 3			13,511
Increment 4			788
(U) Operations			
Support Contractors		2,078	2,459
SPO Operations		1,825	1,783
(U) Total		17,222	18,541
* IMDS FY 98 funds (\$18,541 million) reside within PE 0603108F. Beyond FY 98, all IMDS funds reside within PE 0708611F, project 4654.			19,317

Project 4654

Page 21 of 23 Pages

Exhibit R-3 (PE 0708611F)

1843

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0708611F Support Systems Development (SSD)

4654

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
Andersen Consulting	CPAF	19 Jul 96	N/A	N/A	8,628	13,319	15,511	16,309	TBD	TBD
<u>Support and Management Organizations</u>										
MITRE	Var		N/A	N/A	2,548	1,018	1,010	640	TBD	TBD
TEMS	Var		N/A	N/A	3,225	1,060	1,449	1,157	TBD	TBD
ESC	N/A		N/A	N/A	8,189	1,825	571	1,211	TBD	TBD

Test and Evaluation Organizations

Project 4654

Page 22 of 23 Pages

Exhibit R-3 (PE 0708611F)

1844

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)										DATE	February 1998	PROJECT	
BUDGET ACTIVITY										PE NUMBER AND TITLE			
7 - Operational System Development										0708611F Support Systems Development (SSD)			4654
Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity	Project Office	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program			
Government Furnished Property: Not applicable.													
Subtotal Product Development													
Subtotal Support and Management													
Subtotal Test and Evaluation													
Total Project													

Project 4654

Page 23 of 23 Pages

Exhibit R-3 (PE 0708611F)

Project 4654

Page 23 of 23 Pages

Exhibit R-3 (PE 0708611F)

1845

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0804734F

UNCLASSIFIED

PE TITLE: Cryptologic/SIGINT Related Skill Training

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0804734F Cryptologic/SIGINT Related Skill Training								1005	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
1005	Sentinel Bright Phase II	1,778	1,258	0	0	0	0	0	0	0	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

**(U) A. Mission Description and Budget Item Justification**  
 Provides funding required for the SENTINEL II (SII) Integration Program which is designed to complete the software development begun under SENTINEL BRIGHT II (SBII) and to automate and integrate the commercial off-the-shelf hardware and software purchased for SBII and SENTINEL ASPEN II (SAII) systems. SBII supports cryptologic analysts and maintenance personnel; SAAI supports general military intelligence personnel. This program parallels the fielding of modernized operational intelligence systems and corrects long-standing deficiencies in training "mission ready" intelligence professionals. During FY 97, the program was reforecasted to a COTS integration effort. The remainder of the development effort will support COTS integration, and if COTS products do not satisfy requirements, development will be required. System integration will be completed in FY98. This program is in Budget Activity 7 because it is developing an automated training system/software which will be used to train intelligence professionals to accomplish their mission.

**(U) Acquisition Strategy:** SII was a modernization effort originally phased in blocks. During FY 97, the AF realized they could get a better product for the same amount of funding by using a COTS strategy, so they started using the IC4I contract which has three prime contractors. Bids will be solicited from each contractor on the IC4I contract for each phase of the COTS acquisition. The strategy is to use a spiral acquisition process, allowing for maximum upgrade capability and maintaining commonality with other training systems already in use at Goodfellow AFB while keeping requirements flexible and budget fixed.

**(U) FY 1997 (\$ in Thousands):**  
 (U) \$150 SENTINEL II Contract: Maintained contractor's development facility/test bed  
 (U) \$400 MITRE: Provided engineering support, operational requirements analysis, integration management, and risk assessment  
 (U) \$100 46<sup>th</sup> Test Squadron: Provided test support for DT&E efforts  
 (U) \$125 Program Office: Included various types of administrative support, including mission travel  
 (U) \$1,003 IC4I Contract: Supported integration/extension of COTS products to meet requirements and development when COTS products alone did not satisfy requirements  
 (U) \$1,778 Total

Project 1005

Page 1 of 5 Pages

Exhibit R-2 (PE 0804734F)

1847

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT  
1005

## 7 - Operational System Development

0804734F Cryptologic/SIGINT Related Skill  
Training

## (U) FY 1998 (\$ in Thousands):

(U) \$647 IC4I Contract: Will complete COTS integration and development required to meet SII requirements  
 (U) \$477 MITRE: Will provide engineering support, operational requirements analysis, integration management, and risk assessment  
 (U) \$134 Program Office: Will include various types of administrative support including mission travel  
 (U) \$1,258 Total

## (U) FY 1999 (\$ in Thousands):

(U) \$0 Total

## (U) B. Program Change Summary (\$ in Thousands)

	FY 1997	FY 1998	FY 1999	Total Cost
(U) Previous President's Budget (FY 1998 PB)	1,781	1,427	0	7,900
(U) Appropriated Value	1,887	1,427		
(U) Adjustments to Appropriated Value				
a. Cong Reductions	-65	-145		
b. SBIR	-41	-24		
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming				
e. Recissions	-3			
(U) Current Budget Submit/FY 1999 President's Budget	1,778	1,258	0	7,330

## (U) Change Summary Explanation:

Funding: Changes due to Congressional reductions

Schedule: None

Technical: None

## (U) C. Other Program Funding Summary (\$ in Thousands)

Not Applicable

Project 1005

Page 2 of 5 Pages

Exhibit R-2 (PE 0804734F)

1848

UNCLASSIFIED

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE	February 1998		PROJECT
BUDGET ACTIVITY	PE NUMBER AND TITLE	0804734F Cryptologic/SIGINT Related Skill Training			
7 - Operational System Development					1005
(U) D. <u>Schedule Profile</u>					
		FY 1997	FY 1998	FY 1999	
		1 2 3	2 3 4	2 3 4	
(U) Draft ORD					
(U) Begin SENTINEL STAR (SENTINEL Tech Arch and Replacement) Mods					
(U) Network Upgrade					
(U) Final ORD					
(U) COTS/Hardware Prototype					
(U) Install Classrooms					

Exhibit R-2 (PE 0804734F)

Page 3 of 5 Pages

Project 1005

1849

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

7 - Operational System Development

0804734F Cryptologic/SIGINT Related Skill Training

PROJECT

1005

(U) A. Project Cost Breakdown (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) System Upgrade	1,003	647	0
(U) System Engineering Development	400	477	
(U) Travel	40	50	
(U) Program Office Support	85	84	
(U) Test and Evaluation	100	0	
(U) Contract Development Facility	150	0	
(U) Total	1,778	1,258	0

(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
<u>Product Development Organizations</u>										
(U) E-Systems	CPAF	Mar 93	N/A	N/A	2,184	150	0	0	0	2,334
(U) IC4I Contract	IDIQ	Apr 98	TBD	TBD	0	1,003	647	0	0	1,650
<u>Support and Management Organizations</u>										
(U) Program Support	N/A	N/A	N/A	N/A	564	125	134	0	0	823
(U) MITRE	T&M	Mar 93	N/A	N/A	1,546	400	477	0	0	2,423

Test and Evaluation Organizations

Project 1005

Page 4 of 5 Pages

Exhibit R-3 (PE 0804734F)

1850

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

7 - Operational System Development

0804734F Cryptologic/SIGINT Related Skill Training

1005

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total		Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
					Prior to FY 1997	FY 1997					
(U) 46 <sup>th</sup> Test Sqn	AF Form 616	TBD	N/A	N/A	0	100	0	0	0	0	100
Government Furnished Property: None											
Subtotal Product Development											
Subtotal Support and Management											
Subtotal Test and Evaluation											
Total Project											
					2,184	1,153	647	0	0	0	3,984
					2,110	525	611	0	0	0	3,246
					0	100	0	0	0	0	100
					4,294	1,778	1,258	0	0	0	7,330

Project 1005

Page 5 of 5 Pages

Exhibit R-3 (PE 0804734F)

1851

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 0901218F

PE TITLE: Civilian Compensation Program

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE	February 1998
BUDGET ACTIVITY		PE NUMBER AND TITLE								PROJECT	
7 - Operational System Development		0901218F Civilian Compensation Program								4139	
		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost	
4139	COST (\$ in Thousands)										
	Security Require Determination	6,261	6,285	6,756	6,973	7,210	7,119	7,149	0	TBD	
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	

(U) A. Mission Description and Budget Item Justification  
 This program element provides for payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to the Federal Employees Compensation Act (FECA) under Title 5 U.S.C., Chapter 81. The Department of Labor (DOL) administers this program and charges the Department of the Air Force for its employee costs; therefore, this is a MUST PAY bill for Air Force. The PE excludes manpower authorizations and costs.

Acquisition Strategy:

(U) FY 1997 (\$ in Thousands):  
 - (U) \$6,261 Required to continue a program to compensate employees assigned to RDT&E facilities for worked-related injury or disease.  
 - (U) \$6,261\* Total (Actual AF bill)

(U) FY 1998 (\$ in Thousands):  
 - (U) \$6,285 Required to continue a program to compensate employees assigned to RDT&E facilities for worked-related injury or disease  
 - (U) \$6,285 Total

(U) FY 1999 (\$ in Thousands):  
 - (U) \$6,756 Required to continue a program to compensate employees assigned to RDT&E facilities for worked-related injury or disease  
 - (U) \$6,756 Total

Project 4139

Page 1 of 3 Pages

Exhibit R-2 (PE 0901218F)

1853

UNCLASSIFIED



UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
7 - Operational System Development	0901218F Civilian Compensation Program		4139	
(U) B. <u>Program Change Summary (\$ in Thousands)</u>				
(U) Previous President's Budget	FY 1997	FY 1998	FY 1999	Total
(U) Appropriated Value	5,793	6,497	6,756	Cost
(U) Adjustments to Appropriated Value	5,917	6,497		TBD
a. Cong Gen Reductions	-124	-212		
b. SBIR				
c. Omnibus or Other Above Threshold Reprogram				
d. Below Threshold Reprogramming	468			
e. Recission				
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/ FY 1999 President's Budget	6,261	6,285	6,756	TBD
(U) Change Summary Explanation:				
Funding: Decreases in FY98 (-212) for civilian injury and unemployment compensation costs are due to medical inflation decreases and Consumer Price Index (CPI) decreases. This information was provided by the Department of Labor (DOL) based on their analysis of FY 97 Federal Employees Compensation Act (FECA) Chargeback costs. DOL administers this program and charges the Air Force for its employee's compensation costs; therefore, both programs are MUST PAY bills mandated by law (5 USC, Chapter 81).				
Schedule: N/A				
Technical: N/A				

Project 4139

Page 2 of 3 Pages

Exhibit R-2 (PE 0901218F)

Project 4139

Page 2 of 3 Pages

Exhibit R-2 (PE 0901218F)

1854

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998						
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT						
<b>7 - Operational System Development</b>	<b>0901218F Civilian Compensation Program</b>		<b>4139</b>						
<u>(U) C. Other Program Funding Summary (\$ in Thousands)</u>									
	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	To	Total
(U) Operation and Maintenance	21,283	21,562	22,355	22,679	23,528	25,245	25,759	Compl	Cost
								0	TBD

UNCLASSIFIED

**THIS PAGE INTENTIONALLY LEFT BLANK**

PE NUMBER: 1001018F

UNCLASSIFIED

PE TITLE: NATO JSTARS

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE		February 1998						
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT				
7 - Operational System Development		1001018F NATO JSTARS				0002				
COST (\$ In Thousands)		FY 1997 Actual	FY 1998 Estimate	FY 1999 Estimate	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	Cost to Complete	Total Cost
0002	NATO JSTARS	5,975*	26,061	0	0	0	0	0	0	TBD
Quantity of RDT&E Articles		0	0	0	0	0	0	0	0	0

**(U) A. Mission Description and Budget Item Justification**

NATO initiated the Alliance Ground Surveillance (AGS) program to provide NATO commanders near-real time surveillance and targeting information on moving and stationary ground targets (growth to maritime operations), slow moving rotary and fixed wing aircraft, and rotating antennas from airborne platforms. To meet these needs, the US proposed a "Fast Track" strategy comprised of the modification and enhancement of the US Joint Surveillance Target Attack Radar System (Joint STARS). The Conference of National Armament Directors (CNAD) postponed a decision on Alliance Ground Surveillance (AGS), directed the NATO Project Structure to intensively search for fresh concepts and acquisition options to meet the complete AGS capability, and report these new options at the April 1998 CNAD. The United States, in response to this direction, has proposed an option whereby NATO would develop and procure a system based on the ongoing US Joint STARS Radar Technology Insertion Program (RTIP) contained on a platform of NATO's choice. The US is conducting a feasibility study of this option during FY1998.

An evaluation of the tasks required to support the Government's ongoing efforts to find new alternatives resulted in a contract change proposal to the NATO Phase IV Study extending the period of performance through 31 May 1998 in lieu of January 1998 for support of additional tasks requested by OSD and for continuation of NATO Consultation Command and Control Agency (NC3A) activities. The NATO AGS Integrated Product Team (IPT) has determined that it is premature to develop and award a major new study effort prior to the next CNAD meeting. This program is in Budget Activity 7, Operational System Development, because it involves development on a system that has been operationally fielded.

(U) Acquisition Strategy -The U.S. and other NATO nations are developing fresh concepts and acquisition options to meet the AGS requirements, giving due consideration to an air segment made up of both NATO-owned and national assets, and a NATO-owned ground segment. The CNAD stipulated that these options be prepared for presentation to, and consideration by, the CNAD at its April 1998 meeting.

(U) FY 1997 (\$ in Thousands)		
- (U)	\$3,782	NATO Studies
- (U)	\$25	Provisional Project Office
- (U)	\$2,168	Other Government Costs (ESC/IPO Support)
- (U)	\$5,975	Total

Project 0002

Page 1 of 5 Pages

Exhibit R-2 (PE 1001018F)

1857

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

1001018F NATO JSTARS

0002

(U) FY 1998 (\$ in Thousands)

- (U)	\$2,086	NATO Studies
- (U)	\$100	Provisional Project Office
- (U)	\$2,905	Other Government Cost (ESC/JPO Support)
- (U)	\$19,000	Pending Approval for Above Threshold Reprogramming
- (U)	<b>\$24,091</b>	<b>Total</b>

(U) FY 1999 (\$ in Thousands)

- (U)	\$0	Total
-------	-----	-------

(Note: FY99 budget is established at \$0)

(U) B. Program Change Summary (\$ in Thousands)

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 1998 PB)	0	36,061	0	
(U) Appropriated Value	0	26,061		
(U) Adjustments to Appropriated Value				
a. Cong Gen Reductions	-25	-1355		
b. SBIR	-158	-615		
c. Omnibus or Other Above Threshold Reprogram	*6,168			
d. Below Threshold Reprogramming				
e. Rescissions	-10			
(U) Adjustments to Budget Years Since FY 1998 PB				
(U) Current Budget Submit/FY 1999 President's Budget	5,975	**24,091	0	

## (U) Change Summary Explanation:

(U) Funding: \*FY97 Appropriation Act provided \$6.3 Million for Joint STARS, PE64770, in support of the initial NATO AGS effort. Funds were reclassified (1415-3) from PE 64770F into A1018F. \*\*Portion of current budget (\$19,000) awaiting AF reprogramming.

(U) Schedule: None

(U) Technical: None

Project 0002

Page 2 of 5 Pages

Exhibit R-2 (PE 1001018F)

1858

UNCLASSIFIED

UNCLASSIFIED

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		DATE	February 1998	
BUDGET ACTIVITY	PE NUMBER AND TITLE		PROJECT	
<b>7 - Operational System Development</b>	<b>1001018F NATO JSTARS</b>		<b>0002</b>	
<u>(U) C. Other Program Funding Summary (\$ in Thousands)</u>				
None.				
<u>(U) D. Schedule Profile</u>				
		<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
1	3	4	1	3
	X			4
(U) CNAD Decision				
(U) Completion of Phase IV				
<p>Legend:</p> <p>X - Denotes Planned Activity</p> <p>* - Denotes Completed Activity</p>				
Project 0002		Page 3 of 5 Pages		Exhibit R-2 (PE 1001018F)

1859

UNCLASSIFIED

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)			DATE	February 1998
BUDGET ACTIVITY	PE NUMBER AND TITLE			PROJECT
7 - Operational System Development	1001018F NATO JSTARS			0002
(U) A. <u>Project Cost Breakdown (\$ in Thousands)</u>				
	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>	
(U) NATO Studies	3,782	2,086	0	
(U) Provisional Project Office (PPO)	25	100	0	
(U) Other Government Costs	2,168	2,905	0	
(U) Awaiting AF Reprogramming Actions		19,000		
(U) Total	5,975	24,091	0	
NOTE: FY1999 and out budgets will be dependent upon CNAD decision in Apr 98.				

Project 0002

Page 4 of 5 Pages

Exhibit R-3 (PE 1001018F)

1860

UNCLASSIFIED

UNCLASSIFIED

## RDT&amp;E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)

DATE

February 1998

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

## 7 - Operational System Development

1001018F NATO JSTARS

0002

## (U) B. Budget Acquisition History and Planning Information (\$ in Thousands)

## Performing Organizations:

Contractor or Government Performing Activity	Contract Method/Type or Funding Vehicle	Award or Obligation Date	Performing Activity EAC	Project Office EAC	Total Prior to FY 1997	Budget FY 1997	Budget FY 1998	Budget FY 1999	Budget to Complete	Total Program
Northrop	Fixed Price	Apr 96			2,478	0	0	0	0	2,478
Grumman										
Rome Labs	Fixed Price	Sep 96			485	0	0	0	0	485
Northrop	Fixed Price	Jan 97				3,782	0	0	0	3,782
Grumman										
Northrop	TBD	Jan 98					2,086	0	0	2,086
Grumman										
Various Contracts	TBD						*19,000			*19,000
Product Development Organizations										
ESC (Provisional Project Office)							100			100
Support and Management Organizations										
MITRE	Cost Plus Award Fee	Oct 94/ Jun 96			518	739	785			
TEMS	IDIQ	Mar - May 96			476	757	1,197			
Miscellaneous	Various Contracts				324	697	923			
Total Project					4,281	5,975	24,091			

## Test and Evaluation Organizations

Government Furnished Property: None

Project 0002

Page 5 of 5 Pages

Exhibit R-3 (PE 1001018F)

1861

UNCLASSIFIED



**THIS PAGE INTENTIONALLY LEFT BLANK**